EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-01

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-W-09-024	06/23/2011 To 06/22/2012 Base Option Period Number 2	Support for GLBTS &LaMPS

Contractor: BATTELLE MEMORIAL INSTITUTE

Specify Section and paragraph of Contract SOW:

Purpose:
- ☐ Work Assignment
- ☐ Work Assignment Amendment
- ☒ Work Plan Approval
- ☐ Work Assignment Close-Out
- ☐ Incremental Funding

Period of Performance: From 06/27/2011 To 06/22/2012

Comments:
This action approves the contractor's work plan dated November 1, 2012.

☐ Superfund — Accounting and Appropriations Data — ☒ Non-Superfund

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

SFO (Max 2): ☐

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
2										
3										
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5										

Authorized Work Assignment Ceiling

	Cost/Fee:	LOE:
Contract Period: 06/23/2011 To 06/22/2012	$0.00	
This Action:	$0.00	
Total:	$0.00	

Work Plan / Cost Estimate Approvals

	Cost/Fee:	LOE:
Contractor WP Dated: 11/01/2011	$229,924.00	1,958
Cumulative Approved:	$491,495.00	4,137

Work Assignment Manager Name ~~E Marie Wines~~ Frank E Anscombe (Signature) (Date)	Branch/Mail Code: Phone Number 312-886-6034 FAX Number:
Project Officer Name Cynthia Bowie (Signature) (Date)	Branch/Mail Code: Phone Number: 202-564-7726 FAX Number:
Other Agency Official Name (Signature) (Date)	Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name Christine Edwards Christine Edwards 5/4/2012 (Signature) (Date)	Branch/Mail Code: Phone Number: 202-564-2182 FAX Number:

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-01

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-W-09-024	06/23/2009 To 06/22/2012 Base Option Period Number 2	Support for GLBTS & LaMPs

Contractor: BATTELLE MEMORIAL INSTITUTE

Specify Section and paragraph of Contract SOW:

Purpose:
- ☐ Work Assignment
- ☐ Work Assignment Amendment
- [X] Work Plan Approval
- ☐ Work Assignment Close-Out
- ☐ Incremental Funding

Period of Performance: From 06/27/2011 To 06/22/2012

Comments:
The technical and financial plan dated July 8, 2011 is approved.

☐ Superfund — Accounting and Appropriations Data — [X] Non-Superfund

SFO (Max 2): ☐

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
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Authorized Work Assignment Ceiling

	Cost/Fee	LOE
Contract Period: 06/23/2009 To 06/22/2012	$0.00	
This Action:	$0.00	
Total:	$0.00	

Work Plan / Cost Estimate Approvals

	Cost/Fee	LOE
Contractor WP Dated: 07/11/2011	$261,573.00	2,179
Cumulative Approved:	$261,573.00	2,179

Work Assignment Manager Name: E-Marie Wines (Signature) (Date)	Branch/Mail Code: Phone Number: 312-886-6034 FAX Number:
Project Officer Name: Cynthia Bowie (Signature) (Date)	Branch/Mail Code: Phone Number: 202-564-7726 FAX Number:
Other Agency Official Name (Signature) (Date)	Branch/Mail Code: Phone Number: FAX Number:
Contracting Officer Name: Christine Edwards Christine Edwards 10/3/11 (Signature) (Date)	Branch/Mail Code: Phone Number: 202-564-2182 FAX Number:

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-01

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-W-09-024	Base X Option Period Number: 06/23/2009 To 06/22/2012	Support for GLBTS & LaMPs

Contractor: BATTELLE MEMORIAL INSTITUTE

Specify Section and paragraph of Contract SOW:

Purpose:
- ☐ Work Assignment
- ☐ Work Assignment Amendment
- ☒ Work Plan Approval
- ☐ Work Assignment Close-Out
- ☐ Incremental Funding

Period of Performance: From 06/27/2011 To 06/22/2012

Comments:
The technical and financial plan dated July 8, 2011 is approved.

☐ Superfund — Accounting and Appropriations Data — ☒ Non-Superfund

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

SFO (Max 2): ☐

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
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4										
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Authorized Work Assignment Ceiling

	Cost/Fee	LOE
Contract Period: 06/23/2009 To 06/22/2012	$0.00	
This Action:	$0.00	
Total:	$0.00	

Work Plan / Cost Estimate Approvals

	Cost/Fee	LOE
Contractor WP Dated: 07/08/2011	$261,573.00	2,179
Cumulative Approved:	$261,572.00	2,179

Work Assignment Manager Name: E-Marie Wines (Signature) (Date)		Branch/Mail Code: Phone Number: 312-886-6034 FAX Number:
Project Officer Name: Cynthia Bowie (Signature) (Date)		Branch/Mail Code: Phone Number: 202-564-7726 FAX Number:
Other Agency Official Name (Signature) (Date)		Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: Christine Edwards (Signature)	8/9/11 (Date)	Branch/Mail Code: Phone Number: 202-564-2182 FAX Number:

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-01

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-W-09-024	06/23/2009 To 06/22/2012 Base Option Period Number 2	Technical Support for GLBTS

Contractor	Specify Section and paragraph of Contract SOW
BATTELLE MEMORIAL INSTITUTE	Tasks 1-7

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [ ] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 06/27/2011 To 06/22/2012

Comments:
Work assignment initiation: A technical and financial workplan is required. Currently, there are 2,179 Professional Labor Hours allocated for this Work Assignment.

☐ Superfund — **Accounting and Appropriations Data** — [X] Non-Superfund

SFO (Max 2):

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 5)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
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4										
5										

Authorized Work Assignment Ceiling

	Contract Period	Cost/Fee:	LOE:
	06/23/2009 To 06/22/2012		
This Action:			
Total:			

Work Plan / Cost Estimate Approvals

	Cost/Fee:	LOE:
Contractor WP Dated:		
Cumulative Approved:		

Work Assignment Manager Name: E-Marie Wines	(Signature)	(Date)	Branch/Mail Code: Phone Number 312-886-6034 FAX Number:
Project Officer Name: Cynthia Bowie	(Signature)	(Date)	Branch/Mail Code: Phone Number: 202-564-7726 FAX Number:
Other Agency Official Name:	(Signature)	(Date)	Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: Christine Edwards	P Barton for (Signature)	6/29/11 (Date)	Branch/Mail Code: Phone Number: 202-564-2182 FAX Number:

U.S. EPA
Great Lakes National Program Office
June 08, 2011
Contract Number: EP-W-09-024
Work Assignment Number: 2-01

Title: Technical Support for EPA's "A Great Lakes Binational Toxics Strategy: Canada-U.S. Strategy for the Virtual Elimination of Persistent Toxics Substances in the Great Lakes"

Purpose: This work assignment is a continuation of worked started under Contract EP-W-09-024,Work Assignment 1-01. This work assignment supports the Great Lakes Binational Toxics Strategy (also, Strategy, or GLBTS), which in turn complements and contributes to the Agency-wide Persistent, Bioaccumulative and Toxic Chemicals (PBT) Strategy. The PBT Strategy targets the Level I substances list of the GLBTS, as well as other toxic substances, for activities and actions relating to the reduction of these substances in the environment.

I. Background

EPA's Great Lakes National Program Office (GLNPO), located in Chicago, acts as the Agency's knowledge center for a geographic area, the Great Lakes watershed. In keeping with the objectives of the Great Lakes Water Quality Agreement (GLWQA) to "virtually eliminate" the discharge of persistent toxic substances into the Great Lakes basin, in 1993 GLNPO began the "Virtual Elimination Pilot Project". GLNPO developed technical, research and policy reports which laid the theoretical groundwork for the GLBTS, and by extension, the PBT Strategy.

On April 7, 1997, Administrator Browner and the Canadian Minister of the Environment March signed the GLBTS. In line with the GLWQA, the GLBTS calls for reduction and virtual elimination of targeted persistent toxic substances in the Great Lakes basin. Several substances are targeted for percentage reductions within a ten-year time frame on the path to virtual elimination.

Implementation of the GLBTS entails in part a four-step analytical process for assessing sources of the Level I toxic substances, summarizing regulatory incentives and disincentives, and promoting appropriate actions by Stakeholders.

EPA is also drafting a strategy on how to improve the assessment of potentially toxic substances in the Great Lakes (GL). Historically, a majority of the effort in the GL has focused on chemical monitoring programs which provide extensive spatio-temporal information on chemicals selected for monitoring. However, relatively little work has been systematically conducted to determine the biological effects that may be occurring as a result of exposure to potentially toxic substances in the GL. A major emphasis of this strategy is to provide the rationale and approaches to improve systematic, effects-based information as a complement to the chemical monitoring information. Specific sections of the strategy document require additional effort to identify information in the literature relevant to the analysis, summarize that information, and utilize the information to improve the comprehensiveness of the GL strategy document. Two specific areas require additional effort and are detailed as specific tasks below.

II. Scope of Work

The Contractor shall perform the tasks as listed below. This work assignment continues efforts performed under Work Assignment 01. There shall not be any duplication of effort.

Task 1: Task Management

The Contractor shall prepare and submit a work plan in accordance with the requirements of this contract. The Contractor shall also participate in general planning conference calls and on-site meetings, prepare monthly progress reports, and conduct other task management activities.

The Contractor's monthly progress reports shall provide a breakdown of costs for each subtask and for each workgroup. Costs shall be provided on a bimonthly basis. If the Contractor determines that there are insufficient hours allocated to complete any given task, the Contractor shall convey this information to the EPA WAM as soon as possible.

The Contractor shall ensure that appropriate quality assurance measures are taken. Deliverables are expected to be of high quality and to contain a minimum of errors (unless the document requested is simply an interim draft).

The Contractor shall ensure that documents to be posted on the web are constructed on GLNPO's EXTRANET, http://chicago.glnpo.net/bns/. GLNPO will establish an account for the Contractor's use.

The Contractor shall submit all final reports/documents as Microsoft Word and Adobe Acrobat Portable Document File, via email and/or disk.

The Contractor shall assist EPA in assuring that there is proper coordination between the GLBTS and the PBT Strategy, other EPA efforts such as Lakewide Management Plans (LaMPs) and Remedial Action Plans (RAPs), and with other international toxics reduction efforts such as the work being done on Persistent Organic Pollutants (POPs) and by the Commission for Environmental Cooperation (CEC), etc.

The Contractor shall assist EPA in assuring that the many tasks to be carried out under this work assignment are completed in accordance with the overall GLBTS schedule, and that information obtained in support of any GLBTS-related task is also made available to all other relevant parties. In other words, the Contractor shall help assure that "economies of scale" are realized, and that the implementation of the GLBTS is carried out as efficiently as possible.

The Contractor shall assist EPA with reporting and with outreach/communication efforts, and shall provide substance-specific workgroup support, technical support and analyses, support for public meetings, and support to LaMPs (upon further direction by the WAM). The Contractor shall also assist EPA in its efforts to meet the long-range transport and sediment challenges delineated in the GLBTS (upon further direction by the WAM).

Task 2: Reports

Upon further direction by the EPA WAM, the Contractor shall make modifications to the GLBTS Step 3 reports, Management Assessment Report, and other reports produced in the effort to assist the GLBTS Workgroups. The schedules for delivering these report modifications will be provided by the WAM at the time of assignment.

Task 3: Work Group Support

The Contractor shall assist EPA's workgroup leaders. The Contractor shall help the workgroup leaders to prepare for meetings and/or workshops with their workgroups, facilitate workgroup meetings, and provide minutes from the meetings (unless otherwise directed). They shall also provide technical and administrative assistance to the workgroup leaders as requested. The Contractor shall continue to report the amount of effort expended in support of each of the chemical-specific work groups, whenever such a breakdown is possible. The following are the named EPA work groups:

- Mercury
- Pesticides
- OCS
- Sector Workgroup
- GLBTS Management Framework
- Integration Workgroup
- -B(a)P/HCB
- -Dioxins/Furans
- Burn Barrel Sub-workgroup
- -PCBs
- -Substance Workgroup
- Monitoring and Surveillance Workgroup

Task 4: Outreach and Communication

Upon further direction by the EPA WAM, the Contractor shall assist in the development of strategies for outreach to industry, States, Tribes, environmental groups and other non-governmental organizations, the public, and other stakeholders.

The Contractor shall assist EPA in its communication efforts as directed by EPA WAM. This shall include updating the stakeholder database so that it is easily used to reach stakeholders via e-mail, sending messages to stakeholders, gathering responses, preparing documents for public use, etc.

Workgroup Activity Updates, as directed by the WAM, the contractor shall prepare a draft and final bi-annual "Updates". These "Updates" will be completed for distribution at the bi-annual GLBTS Stakeholder Forum meetings.

Task 5: Technical Support and Analyses

A. Technical Support and Analyses: The Contractor shall provide technical support to EPA to assist in carrying out the implementation of the GLBTS. The Contractor shall develop and analyze innovative and non-regulatory strategies for the reduction and virtual elimination of the Level I and Level II GLBTS substances. This analysis shall be conducted in such a way as to facilitate communication and involve stakeholders. Emphasis should be on how to actually effect change -- what incentives to use to get stakeholders to change practices, and how to implement specific actions at the Lake, State and local levels to achieve reductions. Much of this analysis will be incorporated into the reports discussed earlier.

The Contractor shall provide draft and final Management Assessment Reports on all Level 1 Substances, including a Final Summary document which provides an Executive Summary plus all of the final Management Assessment Reports.

B. Effects-Based Monitoring Tools for Ecological Risk Assessment

Environmental monitoring efforts for potentially toxic pollutants historically have relied on chemical measurements in different matrices (water, sediment tissue). However, there are some important drawbacks to only using analytical approaches to monitor for contaminants of possible concern, including (1) lack of detection of "unknown" chemicals possibly responsible for adverse biological effects, (2) uncertainty that measurements of known chemicals have adequate detection limits compared to concentrations that elicit possible biological effects, and (3) inability to reconstruct possible biological effects of chemical mixtures. Past regulatory and monitoring efforts have recognized these drawbacks and addressed them through the use of biological effects-based testing to complement chemical analyses. For example, whole effluent toxicity testing is routinely used in permitting surface water discharges to address the uncertainties associated with a chemical monitoring alone.

The purpose of this task is to conduct a review of existing literature to identify biological effects-based tests and endpoints that have been or can be used for environmental monitoring of aquatic vertebrates and invertebrates. These tests could include lab-based *in vitro* or *in vivo* assays using complex mixtures from the field, such as discharge or receiving waters, sediments/sediment fractions, and even tissue extracts. Samples also could be from organisms held *in situ* (e.g., caged fish studies), or animals collected from extant populations. From these types of systems many molecular, biochemical, histological and apical endpoints could be considered. The endpoints might be "generic" in that they reflect multiple chemical stressors, or they could be "specific" in terms of capturing defined biological pathways of concern. An example of a generic biological endpoint would be acute lethality as measured, for example, via biological tests, like those used for effluent permitting and dredged material assessment programs. An example of a more specific endpoint would be vitellogenin (VTG) expression in male fish, which is an indication of exposure of the animals to one or more estrogenic chemicals.

In addition to identifying *in vivo* and *in vitro* assays/endpoints that have been used for effects-based environmental monitoring, the review shall provide (1) an assessment of the degree to which the endpoint(s) reflects generic versus specific effects (including, for specific endpoints, the pathway(s) affected, e.g., chemical activation of the estrogen receptor for VTG in male fish), (2) the degree to which the assay/endpoints can be related to an adverse response at the individual or population level (see attached paper by Ankley et al. [2010] for further background on this), (3) whether the endpoint/assay would be considered an "off the shelf" measurement (e.g., validated system with strong scientific underpinnings, readily available through commercial, government, and/or other sources, etc.) versus a research tool that may not be ready for broad deployment or use (this point also should consider the degree of validation and standardization that has been conducted), and (4) consideration of the types of matrices to which the assay/endpoint has been successfully applied (e.g., fresh- versus salt-water; whole waters, effluents, sediments, tissues—or extracts thereof, etc.).

C. Strategies for Ecological Risk Assessment of "Chemicals of Emerging Concern":
The objective of this task is to compile, summarize, and analyze strategies emanating from various organizations regarding the assessment of "Chemicals of emerging concern" (CECs), in particular, as they apply to risks to aquatic life in fresh, estuarine, and marine systems. CECs go by a variety of names including, contaminants of emerging concern, emerging contaminants of concern, trace organic contaminants, etc. Therefore some confusion can occur due to differences in terminology. For the purposes of this work, the approach shall be inclusive of all similar groupings. Often the CEC class includes: pharmaceuticals and personal care products, endocrine disrupting compounds, persistent bioaccumulative chemicals, and specific industrial chemicals classes. This task shall include peer reviewed articles as well as gray literature, such as workshop reports, internal reports and presentations, etc.

The following questions will help to guide this work, but these are not intended to limit the scope of the work.

What strategies, workshop reports, etc. exist?
How are CECs defined in each of these strategies?
What are the specific elements in these strategies?
What are the major classes of chemicals within the CEC grouping?
What parameters are used in risk prioritization and assessment?
What tools/information are used to prioritize risk and assess chemical risk?
What are the similarities and differences among strategies?
What are the implementation recommendations?
What are the research recommendations?
What are the major uncertainties identified?

Several national and international organizations have a history of activity in this subject area, including, but not limited to:

International Joint Commission
US EPA
USGS
USFWS
US NOAA
Environment Canada
OECD
Other international governments

In addition, several states, provinces, and interest organizations have a history of activity in this subject area, including, but not limited to:

WERF (Jan 2010 Workshop Report on Progress in Determining Aquatic Impacts of TOrCs)
AWWA
Southern California Coastal Water Research Project
Environmental Council of the States

Task 6: Support to Lakewide Management Plans

The Contractor shall provide technical support to EPA for development of various LaMP documents (i.e, Lake Superior LaMP and bi-annual related public reports). The Contracts shall provide updates for the following documents developed under the previous Work Assignment as directed by the WAM and continue to participate in Lake Superior LaMP calls for the development of these documents

Task 7: Support to Public and Other Meetings

The Contractor shall prepare materials in support of and will attend Great Lakes Binational Toxics Strategy-related meetings. It is anticipated that there will be at least three general Stakeholder Forum meetings, three Integration and/or Sector/Substance workgroup meetings. The Contractor (as directed by the EPA WAM) shall prepare materials in support of and will attend PBT Reduction Strategy Team meetings/calls and the 10-year Anniversary Workshop. Support two half day sessions at SETAC in Portland. Support IAGLR Expert consultation in Duluth, 2011.

III. Deliverables

The Contractor shall prepare and submit a revised work plan in accordance with contract requirements. EPA will approve the work plan in accordance with contract requirements.

The Contractor shall prepare supporting materials, meeting minutes/summaries and strategic direction for the Integration Workgroup, Stakeholder, PBT Strategy Team and other meetings. The Contractor shall also help develop and/or revise the reports as outlined above, following WAM technical direction, as indicated in Attachment A.

A QA/QC plan is not required.

CBI does not apply.

This work assignment relates to pages 4-17 through 6-17 of the current Statement of Work (SOW) of the contract.

IV. Period of Performance

This work assignment will start with the date of the Contracting Officer's signature and extend through June 23, 2012.

V. Level of Effort

The number of technical hours shall not exceed 2,179. The Contractor shall notify the EPA WAM when 75% of the allotted hours have been reached either in any one funding category or in the overall work assignment.

VI. EPA Contacts

Work Assignment Manager:

E. Marie Wines
U.S. Environmental Protection Agency (G-17J)
77 W. Jackson Boulevard
Chicago, IL 60604
Phone: (312) 886-6034
Fax: (312)
email: wines.e-marie@epa.gov

File name: 2011 WA Battelle.doc

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-02

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-W-09-024	06/23/2011 To 06/22/2012	Chem Hazard & Risk Eval
	Base Option Period Number 2	

Contractor: BATTELLE MEMORIAL INSTITUTE

Specify Section and paragraph of Contract SOW:

Purpose:
- ☐ Work Assignment
- ☐ Work Assignment Amendment
- ☒ Work Plan Approval
- ☐ Work Assignment Close-Out
- ☐ Incremental Funding

Period of Performance: From 06/23/2011 To 06/22/2012

Comments:
This action approves the contractor's work plan dated 01/05/2012.

☐ Superfund — Accounting and Appropriations Data — ☒ Non-Superfund

Note: To report additionel accounting and appropriations date use EPA Form 1900-69A.

SFO (Max 2) ☐

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
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5										

Authorized Work Assignment Ceiling

	Cost/Fee	LOE
Contract Period: 06/23/2011 To 06/22/2012	$0.00	
This Action:	$0.00	
Total:	$0.00	

Work Plan / Cost Estimate Approvals

	Cost/Fee	LOE
Contractor WP Dated: 01/05/2012	$134,842.00	1,040
Cumulative Approved:	$282,285.00	2,222

Work Assignment Manager Name: Jeffrey Taylor	Branch/Mail Code:
(Signature) (Date)	Phone Number: 202-564-8828
	FAX Number:
Project Officer Name: Cynthia Bowie	Branch/Mail Code:
(Signature) (Date)	Phone Number: 202-564-7726
	FAX Number:
Other Agency Official Name:	Branch/Mail Code:
(Signature) (Date)	Phone Number:
	FAX Number:
Contracting Official Name: Christine Edwards	Branch/Mail Code:
(Signature) 5/4/2012 (Date)	Phone Number: 202-564-2182
	FAX Number:

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-02

☐ Other ☒ Amendment Number: 000001

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-W-09-024	06/23/2009 To 06/22/2012 Base Option Period Number 2	

Contractor: BATTELLE MEMORIAL INSTITUTE

Specify Section and paragraph of Contract SOW:

Purpose:
- ☐ Work Assignment
- ☒ Work Assignment Amendment
- ☐ Work Plan Approval
- ☐ Work Assignment Close-Out
- ☐ Incremental Funding

Period of Performance: From 06/23/2011 To 06/22/2012

Comments:
The purpose of this amendment is to add 1040 professional hours.

☐ Superfund — Accounting and Appropriations Data — ☒ Non-Superfund

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

SFO (Max 2): ☐

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
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Authorized Work Assignment Ceiling

	Cost/Fee	LOE
Contract Period: 06/23/2009 To 06/22/2012		0
This Action:		0
Total:		0

Work Plan / Cost Estimate Approvals

	Cost/Fee	LOE
Contractor WP Dated:		
Cumulative Approved:		

Work Assignment Manager Name: Jeffrey Taylor (Signature) (Date)		Branch/Mail Code: Phone Number: 202-564-8828 FAX Number:
Project Officer Name: Cynthia Bowie (Signature) (Date)		Branch/Mail Code: Phone Number: 202-564-7726 FAX Number:
Other Agency Official Name (Signature) (Date)		Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: Christine Edwards (Signature) 12/21/11 (Date)		Branch/Mail Code: Phone Number: 202-564-2182 FAX Number:

Work Assignment Form. (WebForms v1.0)

12/220/11

Contract Number: EP-W-09-024

Work Assignment Number: 2-02 (Modification 1)

Title: Technical Support to Chemical Hazard and Risk Evaluation and Risk Management

Purpose:

This work assignment expands the tracking of individual subtasks under this work assignment. When the WAM gives technical direction under this work assignment, the WAM will identify which subtask the work relates to. Battelle will provide hours and costs on each subtasks in the monthly reports.

I. Background:

{No changes in this amendment.}

II. Scope of Work:

Subtask 1. Work Plan and Task Management

No change

Subtask 2. Fracking

Battelle to conduct analysis of EPA databases.

Subtask 3. Chemical Data Reporting (CDR) Rule (old IUR Rule)

Battelle will provide support for developing additional materials and possible webinar to address byproducts and other subjects

Subtask 4. Chemical Prioritization

Battelle will provide database management support for matrix of chemicals selected for potential chemical prioritization activities. Also analytic support on individual chemical cases.

Subtask 5. Cadmium Section 8(d)

Battelle will provide analyses and other support deemed necessary for EPA to complete the TSCA regulatory action addressing cadmium.

Subtask 6. Lead Wheel Weights

Battelle will provide analyses and other support deemed necessary for EPA to complete the TSCA regulatory action addressing lead in wheel weights.

Subtask 7. Chemicals of Concern List -

Assistance in summarizing and preparing response to comments from Notice of Proposed Rulemaking.

III. Deliverables:

Subtasks 2-7 at the WAM's request

IV. Period of Performance:

{No changes in this amendment.}

V. Level of Effort:

The level of effort described in this work assignment increases an additional 1,040 professional hours.

VI. EPA Contacts:

The following Work Assignment Manager and Alternate Work Assignment Manager will remain the same, except for changes in room numbers that are included here:

Work Assignment Manager
Jeffrey Taylor
EPA East Building, Rm 4351B, MC 7405M
1200 Penn. Ave, NW, Washington, DC 20004
Phone: (202) 564-8828
FAX: (202) 564-4775
taylor.jeffrey@epa.gov

Alternate Work Assignment Manager
Karen Hoffman
EPA East Building, Rm 4134C, MC 7405M
1200 Penn. Ave, NW, Washington, DC 20004
Phone: (202) 564-8158
FAX: (202) 564-4775
hoffman.karen@epa.gov

The following Alternate Work Assignment Manager has retired, and therefore will no longer serve in this capacity:

Alternate Work Assignment Manager
Annette Washington
EPA East Building, Rm 4351A, MC 7405M
1200 Penn. Ave, NW, Washington, DC 20004
Phone: (202) 564-8178
FAX: (202) 564-4775
washington.annette@epa.gov

The following Alternate Work Assignment Manager will be added:

Alternate Work Assignment Manager
Katherine Sleasman
EPA East Building, Rm 4410G, MC 7405M
1200 Penn. Ave, NW, Washington, DC 20004
Phone: (202) 564-7716
FAX: (202) 564-4775

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EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-02

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-W-09-024	06/23/2009 To 06/22/2012 Base Option Period Number 2	WA 2-02 on EP-W-09-02

Contractor: BATTELLE MEMORIAL INSTITUTE

Specify Section and paragraph of Contract SOW:

Purpose:
- ☐ Work Assignment
- ☐ Work Assignment Amendment
- ☒ Work Plan Approval
- ☐ Work Assignment Close-Out
- ☐ Incremental Funding

Period of Performance: From 06/23/2011 To 06/22/2012

Comments:
This action approves the work plan dated July 5, 2011.

☐ Superfund — Accounting and Appropriations Data — ☒ Non-Superfund

Note. To report additional accounting and appropriations data use EPA Form 1900-69A.

SFO (Max 2): ☐

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
2										
3										
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Authorized Work Assignment Ceiling

	Cost/Fee	LOE
Contract Period: 06/23/2009 To 06/22/2012	$0.00	
This Action:	$0.00	
Total:	$0.00	

Work Plan / Cost Estimate Approvals

	Cost/Fee	LOE
Contractor WP Dated: 07/05/2011	$147,442.00	1,182
Cumulative Approved:	$147,442.00	1,182

Work Assignment Manager Name: Jeffrey Taylor (Signature) (Date)	Branch/Mail Code:	
	Phone Number:	202-564-8828
	FAX Number:	
Project Officer Name: Cynthia Bowie (Signature) (Date)	Branch/Mail Code:	
	Phone Number:	202-564-7726
	FAX Number:	
Other Agency Official Name (Signature) (Date)	Branch/Mail Code:	
	Phone Number:	
	FAX Number:	
Contracting Official Name: Christine Edwards (Signature) 8/5/11 (Date)	Branch/Mail Code:	
	Phone Number:	202-564-2182
	FAX Number:	

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-02

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-W-09-024	06/23/2009 To 06/22/2012 Base Option Period Number 2	Support Risk Management

Contractor	Specify Section and paragraph of Contract SOW
BATTELLE MEMORIAL INSTITUTE	Task II, Subtask 1; Task III, Subtasks 1, 8, and 1

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [ ] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 06/23/2011 To 06/22/2012

Comments:
Work Assignment Initiation: A Technical and Financial Work Plan is required. There are 1,180 PLHs allocated for this Work Assignment.

☐ Superfund — Accounting and Appropriations Data — [X] Non-Superfund

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

SFO (Max 2): ☐

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

Contract Period:	Cost/Fee:	LOE:
06/23/2009 To 06/22/2012		
This Action:		
Total:		

Work Plan / Cost Estimate Approvals

	Cost/Fee:	LOE:
Contractor WP Dated:		
Cumulative Approved:		

Work Assignment Manager Name: Jeffrey Taylor	(Signature)	(Date)	Branch/Mail Code: Phone Number: 202-564-8828 FAX Number:
Project Officer Name: Cynthia Bowie	(Signature)	(Date)	Branch/Mail Code: Phone Number: 202-564-7726 FAX Number:
Other Agency Official Name:	(Signature)	(Date)	Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: Christine Edwards	Christine Edwards (Signature)	6/23/11 (Date)	Branch/Mail Code: Phone Number: 202-564-2182 FAX Number:

06/09/2011

Contract Number: EP-W-09-024

Work Assignment Number: 2-02

Title: Technical Support to Chemical Hazard and Risk Evaluation and Risk Management

Purpose:

This work assignment continues and expands upon the work initiated under Work Assignment 1-02 of Contract EP-W-09-024. No work performed under previous work assignments will be duplicated under this work assignment.

I. Background:

This work assignment, entitled *Technical Support to Chemical Hazard and Risk Evaluation and Risk Management*, was developed to provide EPA with support in analyzing existing chemicals and pursuing follow-up work for those chemicals that have the highest hazard and risk.

EPA's Existing Chemicals Program addresses pollution prevention, risk assessment, hazard and exposure assessment and characterization, and risk management for chemical substances in commercial use. For the chemicals that EPA identifies as high hazard and risk, EPA will choose from among many actions that it is authorized to take under the current Toxic Substances Control Act. The Agency may pursue such regulatory actions as restricting chemical use through banning its manufacture/import, issuing Significant New Use Rules that require manufacturers/importers to alert EPA of any new uses, and publishing test rules that require the chemical industry to supply EPA with additional data. Among other options, the Agency will also analyze safer substitute chemicals and consider voluntary phase-outs from the chemical manufacturers.

II. Scope of Work:

Subtask 1. Work Plan and Task Management

The contractor shall prepare and submit a technical and financial work plan in accordance with the requirements of this contract. Work under this subtask shall include participating in conference calls, preparing the monthly progress reports, and other task management.

Subtask 2. Hazard and Risk Evaluation

The contractor shall assist EPA with hazard and risk evaluation.

EPA will periodically prioritize chemicals for risk management review. The contractor will help EPA identify and take follow-up action on chemicals that generally have the greatest hazard and risk concerns. EPA will need assistance with spreadsheet and database information management. The contractor may also help EPA conduct research on the chemicals – i.e., regulatory reviews – in order to develop a clear understanding of whether or how the chemicals have already been regulated. Chemical prioritization efforts can tie into such EPA activities as web dialogues, which allow EPA to communicate with stakeholders through threaded discussions.

The contractor may provide support at interdivision meetings where chemicals are evaluated and risk management decisions are developed. The contractor may also provide logistical support, facilitation,

and notetaking for other Existing Chemicals meetings. EPA may ask the contractor to develop a tracking system in an effort to keep accurate records of the actions that EPA takes on chemicals.

The HPV Challenge Program data collection and communication process has nearly reached a conclusion, but EPA may ask Battelle to help it process sponsor organization's communications and analyze data collected through the HPV Challenge Program.

EPA may ask the contractor for other work related to hazard and risk evaluation.

Subtask 3. Inventory Update Reporting (IUR)

The contractor may develop training materials for the IUR, including webinars that will let chemical manufacturers know what steps they need to take in order to comply with reporting changes to the IUR.

The contractor shall be responsible for providing EPA with statistics in terms of production volume, companies, industrial processing and use, consumer and commercial use, and other 2006 IUR information that has been collected by EPA.

IUR website support may also be necessary, as well as other work generally related to the IUR.

III. Deliverables:

Subtask 1.	The contractor shall prepare and submit the work plan in accordance with contract requirements.	
Subtask 2.	Special Hazard and Risk Analyses. Chemical Prioritization and Regulatory Reviews. Hazard and Risk Meeting Support.	At WAM's Request. At WAM's Request. At WAM's Request.
Subtask 3.	IUR Training Support. 2006 IUR Analyses.	At WAM's Request. At WAM's Request.

- **EPA will approve the work plan within 30 days of submission.**
- **A QA plan is not required.**
- **A work plan is required.**
- **CBI does apply.**
- **The work assignment relates to: Task II, Subtask 1; Task III, Subtasks 1, 8, and 13; and Task IV, Subtask 3 of the SOW.**

IV. Period of Performance:

This Work Assignment will start with the date of the Contracting Officer's signature and extend through June 22, 2012.

V. Level of Effort:

The level of effort described in this work assignment shall not exceed 1,180 professional hours.

VI. EPA Contacts:

Work Assignment Manager
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EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-03

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-W-09-024	06/23/2009 To 06/22/2012 Base Option Period Number 2	iemTechnologies Support

Contractor: BATTELLE MEMORIAL INSTITUTE

Specify Section and paragraph of Contract SOW: See attached SOW

Purpose:
- ☐ Work Assignment
- ☐ Work Assignment Amendment
- ☒ Work Plan Approval
- ☐ Work Assignment Close-Out
- ☐ Incremental Funding

Period of Performance: From 07/18/2011 To 06/22/2012

Comments:
Upon review of the submittal, WAM finds the proposed hours, costs, and overall financial plan acceptable.

☐ Superfund — Accounting and Appropriations Data — ☒ Non-Superfund

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

SFO (Max 2): ☐

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
2										
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4										
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Authorized Work Assignment Ceiling

	Cost/Fee	LOE
Contract Period: 06/23/2009 To 06/22/2012	$0.00	
This Action:	$50,000.00	
Total:	$50,000.00	

Work Plan / Cost Estimate Approvals

	Cost/Fee	LOE
Contractor WP Dated: 09/08/2011	$52,386.00	360
Cumulative Approved:	$52,386.00	360

Work Assignment Manager Name: Justin Babendreier (Signature) (Date)		Branch/Mail Code: Phone Number: 706-355-8344 FAX Number:
Project Officer Name: Cynthia Bowie (Signature) (Date)		Branch/Mail Code: Phone Number: 202-564-7726 FAX Number:
Other Agency Official Name (Signature) (Date)		Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: Christine Edwards Christine Edwards (Signature) 11/9/11 (Date)		Branch/Mail Code: Phone Number: 202-564-2182 FAX Number:

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-03

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-W-09-024	06/23/2009 To 06/22/2012	iemTechnologies Support
	Base Option Period Number 2	

Contractor	Specify Section and paragraph of Contract SOW
BATTELLE MEMORIAL INSTITUTE	Tasks 1 & 2

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [ ] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 07/18/2011 To 06/22/2012

Comments:
Technical Support for the Enhancement and Debugging of iemTechnologies (SuperMUSE FRAMES, D4EM, and Related Software Systems)

This WA is a continuation of work under WA 1-03. This work assignment does not duplicate any work in the previous WA.

☐ Superfund — Accounting and Appropriations Data — [X] Non-Superfund

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

SFO (Max 2): ☐

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
2										
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5										

Authorized Work Assignment Ceiling

Contract Period: 06/23/2009 To 06/22/2012 — Cost/Fee: — LOE:

This Action:

Total:

Work Plan / Cost Estimate Approvals

Contractor WP Dated: — Cost/Fee: — LOE:

Cumulative Approved: — Cost/Fee: — LOE:

Work Assignment Manager Name: Justin Babendreier (Signature) (Date)	Branch/Mail Code: Phone Number: 706-355-8344 FAX Number:
Project Officer Name: Cynthia Bowie (Signature) (Date)	Branch/Mail Code: Phone Number: 202-564-7726 FAX Number:
Other Agency Official Name (Signature) (Date)	Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: Christine Edwards Christine Edwards 7/18/11 (Signature) (Date)	Branch/Mail Code: Phone Number: 202-564-2182 FAX Number:

Scope of Work
Work Assignment 2-03; OPPT Contract# EP-W-09-024

Title:

Technical Support for the Enhancement and Debugging of iemTechnologies (SuperMUSE FRAMES, D4EM, and Related Software Systems)

Purpose:

This work assignment is a continuation of work started under Contract Number EP-W-09-024, Work Assignment 1-03. This work assignment does not duplicate any work in the previous work assignment.

Research Program for Integrated Modeling and Tools - iemTechnologies

EPA/ORD/NERL/ERD's research program for investigating sensitivity and uncertainty analyses for various environmental models currently utilizes a series of 400 PCs linked together in a local area network. This bank of PCs, a functional equivalent to a supercomputer, allows for computationally intensive modeling experiments to be conducted. The methodology focuses on computing many simulations of a single model or modeling system application. The cluster is referred to as SuperMUSE – Supercomputer for Model Uncertainty and Sensitivity Evaluation.

The PC cluster and associated management software currently support 32-bit Windows-based operating system environs, and are capable of supporting Linux-based operating systems. To fully utilize this network of PCs, a variety of software tools have been developed using a standard database structure based on contemporary open-source MySQL. Many of the tools are model-independent, where example model dependent prototypes have also initially been developed for simulation of Version 1.x of the FRAMES 3MRA modeling technology. An additional technology D4EM or Data for Environmental Models, interfaces with SuperMUSE and FRAMESv2 to form base infrastructure of the iemTechnologies integrated software scheme.

This statement of work covers maintenance and enhancement of iemTechnologies (SuperMUSE, FRAMES, and D4EM Software Systems, including 3MRA 1.x/2.x tools and other FRAMES domains) and support in software development for additional core tools for uncertainty analysis, sensitivity analysis, and parameter estimation.

Background

The Framework for Risk Analysis in Multimedia Environmental Systems (FRAMES) - Multimedia, Multipathway, Multireceptor Risk Analysis (3MRA) software system is an integrated multimedia modeling system for assessing exposure and risks from the release of hazardous materials placed into a variety of land-based waste management units. The FRAMES 3MRA Version 1.0 (FRAMES 3MRA 1.0) software system was constructed to perform risk analyses for the U.S. Environmental Protection Agency (EPA) Office of Solid Waste to help establish constituent-specific "exit" (e.g., safe disposal) levels for low risk solid wastes. In the

design of FRAMES 3MRA, the component-based approach provides for 1) standardized tools and techniques that are typically used in the assessment process, and 2) capabilities for new functionality to be added.

The FRAMES 3MRA 1.0 was originally designed to run on a single PC computer system. It was found that parallel execution across a number of machines would be valuable, helping to expedite simulation experiments needed for large, national-scale studies and various uncertainty and sensitivity analysis studies. The FRAMES 3MRA 1.x version of the software was designed and built to allow for, among other capabilities, parallel execution of the FRAMES 3MRA 1.0 modeling system across multiple machines. FRAMES 3MRA Version 2.0 software components, covered under this scope as well, represents a further, significantly enhanced software technology that replaces the system user interface with a more generic user interface concept.

To successfully control and implement the FRAMES 3MRA 1.x system so multiple (e.g., millions) runs can be simultaneously executed and tracked on the 400+ machines, a number of software tools have and are being developed to help manage the operation of the system, as well track files, warnings, and errors.

Integrated Environmental Modeling Technologies (iemTechnologies)

iemTechnologies is comprised of the following core technology layers:

Technology	Functionality
D4EM Data for Environmental Modeling	**Interfaces** national, regional, state, local, & user-defined **databases with modeling systems** via use case sets
FRAMES Framework for Risk Analysis in Multimedia Environmental Systems	**Plug-n-Play** model & data assimilation offering **standards-based** I/O management, execution management, error handling, and UA/SA/PE tools.
SuperMUSE Supercomputer for Model Uncertainty and Sensitivity Evaluation	An **OS-independent, hardware** and **software** approach supporting modeling system simulation on 1 to 1000+ PCs, with cluster management.

The framing technologies can be used in constructing & evaluating new or legacy single models, or modeling systems, WITHIN and ACROSS the source-to-outcome paradigm.

Example Components

Because the vocabulary can be daunting at times, a number of key components are defined as follows which describe many of the core iemTechnologies routines/methods, covering, for example, some of the modeling domains found in FRAMES:

- **Aggregated Exit Level Processor II Visualization (AggELP2Vis)**—The AggELP2Vis is a program that performs many of the same operations as the AggELP2MySQL, but instead renders a hypertext markup language (HTML) document that shows all the scenarios in a single context. The original ELP2/RVP allows a user to see one chart at a time, whereas the AggELP2Vis allows the user to see all scenarios and impacts on populations, cohorts, distances, exposures, and receptors that are not specifically protected. A GNUPlot is used to generate the charts.

- **Aggregated Exit Level Processor I for MySQL (AggELP1MySQL)**—The AggELP1MySQL is a program logically identical to the original ELP1 with the simple change that the information is stored in a My Structured Query Language (MySQL) database instead of MS-Access. The resulting file is used as input to the AggELP2MySQL and the AggClientCollect.

- **Aggregated Exit Level Processor II for MySQL (AggELP2MySQL)**—The AggELP2MySQL is a program logically identical to the original ELP2/RVP that reads its inputs from the MySQL database. The results are tables stored in MySQL that are equivalent to the original Protective Summary Output Files. Setting the scenarios in this tool facilitates the AggELP2Vis in displaying all the scenarios simultaneously.

- **Andres Iterated Fractional Factorial Design Dynamic Link Library (AIFFDDLL)**—The AIFFDDLL is the Enhanced Computational Optimization Sensitivity Uncertainty(ECOSU) compliant implementation of a grouping and input changing strategy that seeks to determine which variables in a large number of variables change the output the most. It is a screening method for finding the most sensitive parameters. The AIFFDDLL is delivered as a set of subroutines and functions that are part of a dynamic library.

- **Batch Tasker**—This is a Model Tasker similar to the Command Tasker but without the restriction of executing commands on specific machines. The Batch Tasker consumes a text file where each line is a command. Each command is invoked in order on the next available machine.

- **Central Processing Unit Allocator (CPU Allocator or CPUa)**—The CPUa is responsible for making sure available machines are assigned to a Model Tasker running on some machine in the cluster. Every machine is a slave to a specific CPUa, as there can be multiple CPUa's. The Model Tasker, CPUa, and Tasker Client continuously communicate with each other.

- **Client Collector for Aggregated Exit Level Processor I (CCAggELP1)**—The CCAggELP1 is an application that reads two instances of the output of the AggELP1and merges them into a single instance. This is used to collect the output of ELP1 in pairs across the cluster of machines. The CCAggELP1 is intended to collect simulation results from another single machine. A collection across a large number of machines can then be done by simply using CCAggELP1 to collect the results in pairs and then collect those results into pairs again, and so on until all the

results are accumulated on a single machine. The client collect tool takes the results that are produced on each individual client and compiles them into a single database.

- **Command Tasker**—The Command Tasker is a specialized Tasker that is essentially a server-end batch file manager. The Command Tasker executes commands on specific machines in a specific order. It provides machine-specific commands, based on a set of prerequisite tasks and takes a series of commands, but confirms that specified previous commands have already been executed, thereby accounting for dependent commands (e.g., delete files in a certain order). Similar to the capabilities of the Update Client tool, and actually representing a Model Tasker, this tool delivers binary tree task dependencies in a collection of common aggregated data/files, or reversibly, in distribution of common data/files. The Command Tasker acts as a Model Tasker in managing activities across the cluster, allowing the user to issue commands to clients (e.g., DOS commands for Windows or shell scripts for Linux) that are executed by the Tasker Client. Extensively generic in form, it is currently used for conducting log-scale database collections for 3MRA experiments and for more quickly executing file-management tasks that take individual PCs substantial time to complete.

- **Delegating Dynamic Link Library (DDLL)**—This library is a single entry point for any ECOSU compliment DLL to provide sampling algorithms. For example, if Monte Carlo is chosen as a sampling approach, the DLL is responsible for redirecting all calls to sampling algorithms and all results to the actual Monte Carlo functionality.

- **Enhanced System User Interface (ESUI)**—The ESUI provides the user with an enhanced ability to pick and choose specific input combinations of chemical name, site ID, realization, and concentration of waste (Cw), so only that specific run or set of runs are executed and where one does not have to look through a large number of simulation sets to get to the specific run. All information is stored in the 3MRA header file [hd.ssf].

- **Enhanced 3MRA Chemical Properties Processor**—This is a logically identical chemical property processor that reads its input data from the cp.ssf file instead of reading the ASCII data file originally stored in the CPData directory. The site definition processor (SDP) will read the cp parameters as any other component; it will then call the enhanced CPPDLL. The CPPDLL is responsible for populating all the original values in the cp.ssf datafile from the data provided in the cp.ssf from the SDP.

- **Enhanced 3MRA SUI Deterministic Switch**—This is an addition to the Enhanced System User Interface (ESUI) that allows the user to choose the sampling technique and whether full sampling is accomplished or just a deterministic run. Under FY05 development, the ESUI will be able to run the DSP and allow the user to change the sampling algorithms as well.

- **Enhanced 3MRA SDP Deterministic Switch**—This switch is an addition to the SDP that allows the use of central tendency instead of actually sampling the value from the distribution. The changing value of the sampling technique is passed onto the Delegating Dynamic Link Library via this SDP enhancement.

- **FRAMES-2.0**—The Framework for Risk Analysis in Multimedia Environmental Systems-Version 2.0 (FRAMES-2.0) is a system that allows legacy disparate models and databases to communicate in a plug and play atmosphere. It combines many of the best features of FRAMES

version 1 (e.g., Framework User Interface) and FRAMES 3MRA 1.0 (e.g., Application Programming Interface).

- **FRAMES 3MRA**—The Framework for Risk Analysis in Multimedia Environmental Systems (FRAMES)-Multimedia, Multipathway, Multireceptor Risk Analysis (3MRA) software system is an integrated multimedia modeling system for assessing exposure and risks from the release of hazardous materials placed into a variety of land-based waste management units.

- **FRAMES 3MRA 1.0**—The FRAMES 3MRA Version 1.0 software system was constructed to perform risk analyses for the EPA Office of Solid Waste to help establish constituent-specific "exit" (e.g., safe disposal) levels for low risk solid wastes. In the design of FRAMES 3MRA, the component-based approach provides for 1) standardized tools and techniques that are typically used in the assessment process, and 2) capabilities for new functionality to be added. The FRAMES 3MRA 1.0 was originally designed to run on a single PC computer system.

- **FRAMES 3MRA 1.x**—The FRAMES 3MRA 1.x version of the software was designed and built to allow for, among other capabilities, parallel execution of the 3MRA 1.0 modeling system across multiple machines. It was found that parallel execution across a number of machines would be valuable, helping to expedite simulation experiments needed for large, national-scale studies and various uncertainty and sensitivity analysis studies.

- **FRAMES 3MRA 2.0**—The FRAMES 3MRA Version 2.0 represents a further, significantly enhanced version of the FRAMES 3MRA 1.x software technology by replacing the system user interface with a more generic user interface concept.

- **Framework User Interface Tasker (FUITasker)**—The FUITasker modifies module inputs and either wraps the entire file set and sends it to the Tasker Client for further processing or performs the required processing locally. The FUITasker is a single looping capability for Framework for Analysis of Risk in Multimedia Environmental Systems (FRAMES) 2.0 that allows the user to change the value of any single parameter. The looping can be executed on a single computer (called serial mode) or on the cluster (called parallel mode).

- **Latin Hypercube Dynamic Link Library (LHSDLL)**—The LHSDLL is the ECOSU compliant implementation of the Latin Hypercube sampling algorithm. The LHSDLL is delivered as a set of subroutines and functions that are part of a dynamic library.

- **Model Tasker**—The Model Tasker is a type of a component that provides a listing of things to do and resides on some machine in the cluster. There are many examples of this type of component: the Batch Tasker, Command Tasker, SUI Tasker, and FUITasker are actual examples in use. The Model Tasker, CPUa, and Tasker Client continuously communicate with each other.

- **Morris One-at-a-Time Dynamic Link Library (MOATDLL)**—The MOATDLL is the ECOSU compliant implementation of a one at a time input changing strategy associated with Morris. The MOATDLL is delivered as a set of subroutines and functions that are part of a dynamic library.

- **Process Error Program (PEP)**—The PEP is program that is designed to read the errors and warning files produced by FRAMES 3MRA hwirio.dll and store them in a central MySQL database. The PEP is used to keep track of which components in the simulation have succeeded

or failed. It provides the user with the ability to capture error and warning messages and store them in the same location as the Site Summary Tool (SST). It works on the assumption that when any component of the system software fails, an error or warning file is produced in the grf directory. The PEP simply copies the Warning or Error file from the grf directory to the MySQL database that is referenced in its command line and, therefore, has no user interface.

- **Refactored Monte Carlo Dynamic Link Library (RMCDLL)**—The RMCDLL is the ECOSU compliant implementation of Monte Carlo sampling. The RMCDLL is delivered as a set of subroutines and functions that are part of a dynamic library.

- **Site Summary Tool User Interface (SSTUI)**—The SSTUI allows the user to pick-and-choose output from a set of 3MRA model input and output files (site simulation file [SSF] and global results file [GRF] files) via the SST. For example, it will you allow you to define how to extract information for a variable for a specific chemical and location but averaged for all times. It allows one to statistically roll-up outputs.

- **Site Visualization**—This is a program that displays a plot of all results that have time as a dependent variable. It starts at the source and ends at human and ecological exposure. This application uses GNUPlot to generate charts while the application itself creates an HTML document that has the charts organized in a logical manner.

- **Site Summary Tool (SST)**—The SST is a program that allows the user to extract, summarize, and store modeling results in a database. The SST requires the user to create an instruction *.csv script file that describes what information to consume (i.e., extract) from model inputs and outputs for a single FRAMES 3MRA 1.x simulation. The SST extracts information from the SSF and GRF files, given a text file that describes the variable to be extracted and how to summarize those data. The results of the extract and summary are stored in a MySQL database.

- **System User Interface Tasker (SUITasker)**—The SUITasker reads a header file and buffers up compute jobs so no machines are waiting to execute a job. It passes RunAll.bat and then launches Run.bat, which is on all machines.

- **Tasker Client**—The Tasker Client is the workhorse of the parallel software system. It is a generalized batch file execution tool that uses transmission control protocol/Internet protocol (TCP/IP) to get the information about 1) the job it should contribute to and 2) the specific task it needs to perform. The task is communicated in a single Unicode Transformation Format (UTF) string that contains the batch file and a number of additional text files. It runs the actual jobs and is a slave to the CPUa and then to a Model Tasker to complete a computational task. When the Tasker Client has nothing to compute, it goes and finds something to compute from the CPUa. The Model Tasker, CPUa, and Tasker Client continuously communicate with each other.

- **Tasker**—In the parallel software system, a Tasker is any program that generates tasks that need to be performed and registers itself with the CPU Allocator. It is implemented as a TCP/IP server that waits for client machines to be directed to the Tasker by the CPU Allocator.

- **Update Client**—The Update Client 1) prepares the machines for use in the cluster, 2) copies new executables to all machines in the cluster, 3) reads list of computers, and 4) picks computers. Additional features include creating an input file for the command tasker that can collect, distribute, or invoke a command in parallel across the cluster. The Update Client tool facilitates

the execution of Operating System (OS) level commands (e.g., DOS/Linux commands, batch/script files) on a large number of machines that comprise a cluster. There are two modes of operation: serial or parallel. The tool can be used, for example, to copy a single file to multiple machines, in serial or in parallel, using a binary tree scheme. In serial mode, it can also be used to perform a variety of file management tasks, such as deletion or alteration of file attributes across a network. The enhanced parallel-mode version can replace an additional set of variables with information from a partner machine.

- **FRAMES V2**— Not specifically listed and described by constituent item here, various tools, processors, models and datasets comprise V2 and form the initial starting basis for work described under this, where many of these components have analogies to those described above for 3MRA V1/V2.

Tasks:

A work plan and financial plan is required. A QA/QC plan (i.e., as a Quality Assurance Project Plan or QAPP) is also required. Management of Confidential Business Information (CBI) is not expected to be a part of this tasking.

This work assignment relates to Task III of the current Statement of Work (SOW) of the contract (Task III Technical Program Support – General Support).

The following tasks list the specific work required.

Task 1: Workplan Development, QAPP Development and Project Management

The objective of this task is to document a detailed work plan in response to the Work Assignment Statement of Work. The contractor shall submit a work plan and cost estimate for conducting the assigned work in accordance with the terms of the contract.

Deliverables and Schedule:

1. The contractor shall submit a work plan and cost estimate in accordance with the terms of the contract.

2. The contractor shall submit, in accordance with the terms of the contract, a detailed Quality Assurance Project Plan (category Model Development) describing the project's specific quality assurance project plans to achieving the objectives of the work assignment, and how overall compliance with the QMP for this contract is to be achieved.

Task 2: Maintenance and Enhancement of iemTechnologies software systems (inlcuding SuperMUSE, FRAMES, D4EM, and Related Software Modeling Systems

The objective of this task is to provide software maintenance and enhancement support for the core components of iemTechnologies:D4EM, FRAMES, and SuperMUSE and several modeling domains in FRAMESv2 (3MRAv2, iemWatersheds, CO2, MIRA, etc.).

Primary Focuses Expected

The following primary focuses, as objectives, are expected:

- Testing debugging and enhancement of sampling and model analysis tools (e.g., RMC, AIFFD, RSA, TSDE).
- Support, development, and assimilation of select components of 3MRA1.x (i.e. models, data, processors, tools) into FRAMESv2, constituting 3MRAv2, including for example, ELP1 and ELP2 processor sets,
- Consultation on 3MRAv2 modeling system evaluation, including applications and testing of various models and modeling components using core tools,
- Investigate and assist in design strategies to extend SuperMUSEv1 "tasking" concepts for direct support of 64 bit parallel processing on single desktop platforms.
- General interface support on iemTechnologies-based FRAMES API applications in interacting with other inclusive software systems like those found in iemTechnologies.

General Tasking to be Performed

2.1 Software Maintenance Tasking

The contractor shall perform software maintenance tasking which includes:

- Telephone or email communications with the WAM or the WAM's technical support staff.
- Troubleshooting and resolution of bugs identified by EPA, and those bugs that arise out of testing and evaluation performed by the contractor,
- Development and/or revision of spreadsheet-based test plans, and
- Execution of test plans.

2.2 Software Enhancement Tasking

The contractor shall perform software enhancement which includes:

- Telephone or email communications with the WAM or the WAM's technical support staff.
- Modification of existing software to address new requirements specified by EPA,
- Troubleshooting and resolution of bugs identified by EPA during subsequent testing, and those bugs that arise out of testing and evaluation performed by the contractor,
- Development and/or revision of spreadsheet-based test plans, and
- Execution of test plans.

Software documentation and test plans used as the initial basis shall be current (consult the WAM in each case). These are to be located on USDA's COLAB Development Environment (https://colab.sc.egov.usda.gov/cb/workspace.do), iemHUB.org, ERD's Source Safe, and EPA's ScienceFTP site. Colab will be the used for all of the final contractor's delivery of software and documentation (use 3MRA FRAMES V2 Project Area). Additional software

requirements associated with component enhancements will be specified by EPA through Technical Direction associated with this statement of work.

Development, modification and/or enhancement of existing documentation (i.e., the formal documents which include sections on descriptions, requirements, design, and specifications) will be the responsibility of EPA or as delegated to the contractor by the WAM.

2.3 Software Development Tasking

The contractor shall perform software development tasking which includes:

- Telephone or email communications with the WAM or the WAM's technical support staff.
- Development of new software to address new sets of requirement specified by EPA,
- Troubleshooting and resolution of bugs identified by EPA during subsequent testing, and those bugs that arise out of testing and evaluation performed by the contractor,
- Development and/or revision of spreadsheet-based test plans, and
- Execution of test plans.

Software documentation and test plans used as the initial basis shall be current (consult the WAM in each case). These are to be located on USDA's COLAB Development Environment (https://colab.sc.egov.usda.gov/cb/workspace.do), iemHUB.org, ERD's Source Safe, and EPA's ScienceFTP site. Colab will be the used for all of the final contractor's delivery of software and documentation (use 3MRA FRAMES V2 Project Area). Additional software requirements associated with component enhancements will be specified by EPA through Technical Direction associated with this statement of work.

Development, modification and/or enhancement of new documentation (i.e., the formal documents which include sections on descriptions, requirements, design, and specifications) will be the responsibility of EPA or as delegated to the contractor by the WAM.

2.4 Miscellaneous Software Maintenance, Enhancement, and Development Activities

In addition to revision, execution, and documentation of test plans, the contractor shall be responsible for providing brief summary descriptions (using notation and/or file management features of COLAB) on changes to design and specifications sections as may be needed to maintain and/or enhance software (e.g., brief statements indicating information that may need addition/modification, dictionary and/or database table structure definitions that may need addition/modification, etc).

Technical Direction

In accordance with the terms of the contract, the Agency will provide a written description of each request for work to be completed on specific software components, and the required schedule. These requests will be by Technical Direction and will generally indicate: a) the software component(s) to be tested, de-bugged and/or enhanced, b) initial formulations of

any new or modified software requirements, and c) a not-to-exceed number of hours of time, by staff level category (e.g., Senior Software Engineer), that may be expended by the contractor on the given request. EPA will be responsible for posting any initial set of existing bugs to COLAB for software maintenance or enhancement activities. New requirement sets desired by the Agency will be posted to COLAB as a bug, with an indicator that the bug is associated with a new development.

It is anticipated that several components may be associated with a given request, where work on individual components may or may not be directly related. It is also anticipated that more than one technical directive may need to be active at a given time to address new issues that may arise in bringing closure to an existing request.

Because a given bug cannot always be immediately associated with a given component, it is anticipated some components will be specified in the request that ultimately do not need modification.

While fulfilling given Technical Direction, in the event an additional component(s) is identified by the contractor as needing enhancement or modification to achieve the original request, the contractor shall: a) post associated bugs on COLAB; and b) notify the WAM. As determined by the WAM, a new or modified request will be issued to handle associated software enhancements or modifications of the newly identified component.

The contractor may evaluate any existing iemTechnologies software codes or related codes, for any component at anytime, as needed to execute a given request (including execution of informal software testing by the developer), but shall not post enhanced or modified codes to COLAB, or conduct formal testing of any component, unless that component has been identified in a specific request.

Schedule: Technical direction will be issued in writing or confirmed in writing within five (5) calendar days after verbal issuance. One copy of the technical direction memorandum will be forwarded to the Contracting Officer and the Work Assignment Manager.

Contractor Response to Specific Technical Direction

Prior to initiation of actual bug resolution, enhancement or new development efforts, the contractor will first:

- Review the request,
- As needed review associated codes for components specified in the request, and
- Consult the WAM via telephone to discuss technical content of the request (e.g., to review and modify if necessary newly stated requirements, to discuss current software behaviors needing resolution, and to discuss initial technical approach to be taken to achieve software enhancement or modification).

For each request the contractor shall then execute the required enhancement, modification, development, or testing, and deliver the resulting source code, software, test plans,

and summary notations on design and specifications to the Agency via the COLAB development environment.

During execution of the WA, the contractor shall:

- Attempt to hold phone discussions with the WAM approximately biweekly to discuss technical progress on all active requests.
- Notify the EPA WAM via direct email or other automated COLAB email-based communication when a successfully executed test plan (less Agency approval) for a given component has been posted to COLAB.

In closing out given technical direction, the contractor shall provide a Summary Technical Progress Report in email form to the WAM if one or more components were not completed. In this case, the contractor shall briefly summarize (e.g., in simple table format) which deliverables were not completed for each component.

Processing and Documentation of Software Bugs

For each component, until successfully executed test plan (with Agency approval) status has been reached, it is anticipated that the Agency and the contractor may post new bugs that are identified during review and testing associated with a given request. All detailed notations on specific bugs to be resolved and bug resolution will be conducted via COLAB by both EPA and the contractor. Any new bug identified by the contractor during execution of this WA, which substantially changes existing specifications and design shall be posted to COLAB and appropriate notations provided (i.e., the Agency requires that all substantial changes made to the software are documented through COLAB bugs and COLAB notations for component design and specifications). Any bug identified but not resolved by the contractor during execution of this WA, which substantially affects attainment of the component's stated software requirements, shall also be posted to COLAB (i.e., the Agency requires that all known remaining software deficiencies identified by the contractor during testing be documented in COLAB). Minor bugs resolved during evaluation, modification, enhancement or testing that do not substantially affect existing design and specifications documentation do not need notation in COLAB.

Period of Performance:

This work assignment will start on the date of the contracting officer's signature and extend through June 22, 2012.

Total Task Level of Effort

For purposes of estimating resources for this task the contractor shall assume an overall level of effort of approximately 339 hours total of software development, software testing, and project management which will be split across the two tasks and associated Technical Direction.

Deliverables and Schedule:

Because of the nature of the work to be performed, no initial deliverable dates can be set. Specific iemTechnologies software components to be worked on by the contractor, and associated schedule, will be determined during execution of the WA by agreement between the WAM and contractor. In evaluating content and acceptance criteria for deliverables, the following will generally apply:

A. Successfully executed test plan status (less Agency approval) for a given software component requires that:

1. Specific requirements related to the functionality of the software must be documented (as provided by the WAM within tTechnical Direction);
2. All identified software bugs have been resolved by the contractor or reconciled as future work to be completed by the Agency (e.g., some bugs may not be able to be resolved at this time within current resources);
3. Summary notations on modifications and additions to design and specifications sections of formal documentation have been posted to COLAB by the contractor;
4. Executed and notated test plans have been posted to COLAB by the contractor which satisfy all component requirements; and
5. Source code and compiled software codes have been posted to COLAB.

B. Successfully executed test plan status (with Agency approval) for a given software component requires that:

1. Successfully executed test plan status (less Agency approval) has been attained by the contractor for the given software component;

2. The Agency has reviewed and approved the executed test plan (via email notification to the contactor).

C. Completion Status for Specific Technical Direction

Specific Technical Direction will be deemed complete and no additional efforts should be expended by the contractor on the given request when either:

1. Currently approved hours associated with given Technical Direction have been expended by the contractor and the contractor has provided a Summary Technical Progress Report for all components not completed,

1.a. Based upon the WAM's assessment of degree of completion, the WAM may reauthorize the existing technical direction by adding additional hours to further complete the specific request. Alternatively, the WAM may also choose to not expend additional effort.

1.b. In the event that the existing technical direction is re-authorized with additional hours and associated level of effort, the WAM will notify the contractor and EPA's Project Officer by re-issuing and notating the original

technical direction, indicating both the previous authorized level already expended, the additional level (i.e., added hours) of effort that may be expended by the contractor, and priorities for the additional level of effort.

or

2. Successfully executed test plan status (with Agency approval) has been attained for all components identified in the request.

Special Conditions

1. All requests related to execution of the technical support described within this WA shall be coordinated through the EPA WAM.
2. The contractor shall not respond to requests or inquiries made by other individuals except where made by technical support staff approved by the WAM. Approvals will be issued by the WAM by technical direction.
3. It is the responsibility of the contractor to ensure that a Summary Technical Progress Report for all components can be completed for a given request and delivered to the WAM prior to expending all hours for a given request (i.e., as necessary, final hours available for a given request should be used for this tasking).

EPA Contacts

Work Assignment Manager

Name - Justin Babendreier, USEPA NERL-ORD-ERD
Address - 960 College Station Road, Athens GA 30605
Phone number - 706-355-8344
Email address - babendreier.justin@epa.gov

Alternate Work Assignment Manager

Name - Brandy Manders, USEPA NERL-ORD-ERD
Address - 960 College Station Road, Athens GA 30605

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-04

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-W-09-024	06/23/2009 To 06/22/2012	RRP Support
	Base Option Period Number 2	

Contractor: BATTELLE MEMORIAL INSTITUTE

Specify Section and paragraph of Contract SOW:

Purpose:
- ☐ Work Assignment
- ☐ Work Assignment Amendment
- ☒ Work Plan Approval
- ☐ Work Assignment Close-Out
- ☐ Incremental Funding

Period of Performance: From 06/23/2011 To 06/22/2012

Comments:
This action approves the contractor's work plan dated 04/16/2012.

☐ Superfund — Accounting and Appropriations Data — ☒ Non-Superfund

SFO (Max 2): ☐

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
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Authorized Work Assignment Ceiling

Contract Period: 06/23/2009 To 06/22/2012	Cost/Fee: $0.00	LOE:
This Action:	$483,592.00	
Total:	$483,592.00	

Work Plan / Cost Estimate Approvals

Contractor WP Dated: 04/16/2012	Cost/Fee: $452,016.00	LOE: 2,000
Cumulative Approved:	Cost/Fee: $699,670.00	LOE: 3,000

Work Assignment Manager Name: Ronald Morony (Signature) (Date)		Branch/Mail Code: Phone Number: 202-566-0474 FAX Number:
Project Officer Name: Cynthia Bowie (Signature) (Date)		Branch/Mail Code: Phone Number: 202-564-7726 FAX Number:
Other Agency Official Name (Signature) (Date)		Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: Christine Edwards (Signature)	5/4/2012 (Date)	Branch/Mail Code: Phone Number: 202-564-2182 FAX Number:

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-04

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-W-09-024	06/23/2009 To 06/22/2012 Base Option Period Number 2	Lead-Based Paint Program

Contractor: BATTELLE MEMORIAL INSTITUTE

Specify Section and paragraph of Contract SOW:

Purpose:
- ☐ Work Assignment
- ☐ Work Assignment Amendment
- ☒ Work Plan Approval
- ☐ Work Assignment Close-Out
- ☐ Incremental Funding

Period of Performance: From 06/23/2011 To 06/22/2012

Comments:
This action approves the contractor's technical and financial work plan dated July 7, 2011.

☐ Superfund — **Accounting and Appropriations Data** — ☒ Non-Superfund

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

SFO (Max 2): ☐

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
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Authorized Work Assignment Ceiling

	Cost/Fee	LOE
Contract Period: 06/23/2009 To 06/22/2012	$0.00	
This Action:	$0.00	
Total:	$0.00	

Work Plan / Cost Estimate Approvals

	Cost/Fee	LOE
Contractor WP Dated: 07/28/2011	$247,654.00	1,000
Cumulative Approved:	$247,654.00	1,000

Work Assignment Manager Name: Ronald Morony (Signature) (Date)	Branch/Mail Code:	
	Phone Number:	202-566-0474
	FAX Number:	
Project Officer Name: Cynthia Bowie (Signature) (Date)	Branch/Mail Code:	
	Phone Number:	202-564-7726
	FAX Number:	
Other Agency Official Name (Signature) (Date)	Branch/Mail Code:	
	Phone Number:	
	FAX Number:	
Contracting Official Name: Christine Edwards (Signature) 7/28/11 (Date)	Branch/Mail Code:	
	Phone Number:	202-564-2182
	FAX Number:	

~~Contractor Copy~~

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-04

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-W-09-024	06/23/2009 To 06/22/2012 Base Option Period Number 2	Support of RRP Program

Contractor	Specify Section and paragraph of Contract SOW
BATTELLE M MORIAL INSTITUTE	Tasks III & IV

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [ ] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 06/23/2011 To 06/22/2012

Comments: Work Assignment Initiation. Only a Financial Plan is required

☐ Superfund — Accounting and Appropriations Data — [X] Non-Superfund

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

SFO (Max 2): ☐

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
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Authorized Work Assignment Ceiling

Contract Period:	Cost/Fee:	LOE:
06/23/2009 To 06/22/2012		
This Action:		
Total:		

Work Plan / Cost Estimate Approvals

	Cost/Fee:	LOE:
Contractor WP Dated:		
Cumulative Approved:		

Work Assignment Manager Name: Ronald Morony	(Signature)	(Date)	Branch/Mail Code: Phone Number: 202-566-0474 FAX Number:
Project Officer Name: Cynthia Bowie	(Signature)	(Date)	Branch/Mail Code: Phone Number: 202-564-7726 FAX Number:
Other Agency Official Name:	(Signature)	(Date)	Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: Christine Edwards	Christine Edwards (Signature)	6/21/11 (Date)	Branch/Mail Code: Phone Number: 202-564-2182 FAX Number:

Contract Number: EP-W-09-024

Work Assignment Number: 2-04

Change Number: 0

Title: Support for the Lead-Based Paint Program

Purpose: To provide technical support of the implementation of the Renovation, Repair and Painting Program as well the all other aspects of the Lead-Based Paint Program. This is continuation of work began under work assignment 1-04 of this contract. No work shall be duplicated.

A. Background: Title IV of the Residential Lead-Based Paint Poisoning Prevention Act requires EPA to undertake various actions to reduce the incidence of lead poisoning. These actions include technical studies to support rule making, outreach to the regulated community, outreach to the public and support of the regulatory functions.

B. Scope of Work:

Task 1 RRP Logo Site

The contractor shall develop and maintain the web site where certified renovation firms can access and download the RRP logo with their own certification number. The contractor shall also provide and email address and phone number to answer technical questions on the downloading of the RRP logo. At times it may be necessary to link that email address to a staff person from EPA.

Task 2 Cleaning Verification Cards

When directed by the WAM, the contractor shall provide Cleaning Verification Cards that meet the quality control standards previously developed. The cards shall be shipped to the National Lead Information Center in Rochester, NY. It is anticipated that the cards will be produced in batches of 150,000. Assume two batches will be required.

Task 3 Support of the Outreach Efforts at Trade Shows

When directed by the WAM, the contractor shall purchase exhibit space at trade shows and shall staff the EPA provided booth. These services include shipping the EPA booth to the show and returning it to a location designated by the WAM. Also include in this task is paying for incidental fees such as drapes, delivery charges, etc.

Task 4 Technical Studies

When directed by the WAM, the Contractor shall produce studies on Lead-Based Paint issues. These studies are anticipated to be of short duration, less than 30 days. The exact nature of the study and due date will be contained in the technical direction. Anticipated topics are work practices on Public and Commercial Buildings and revisions to Renovate Right to make it compatible to the final Clearance Standards Rule which will be published in July 2011.

III. Deliverables:

Tasks 1 to 3: A letter report providing statistics on the activity for the contract period shall be provided. This can be part of the monthly report.

Task 4. A draft and final report as detailed in the technical direction.

A work plan is not required. A financial plan is required.

A QA/QC plan is not required.

CBI does not apply.

This work assignment relates to Tasks II, III and IV of the current Statement of Work (SOW) of the contract.

IV. Period of Performance:

This work assignment will start on the date of the Contracting Officer signature and extend through June 22, 2012.

V. Level of Effort

This work assignment shall require no more than 1,000 professional hours.

VI. EPA Contacts:

Work Assignment Manager:
Ronald J. Morony
US EPA National Program Chemicals Division
Program Assessment and Outreach Branch(7404T)
1200 Pennsylvania Avenue, NW
Washington, DC 20460
Ph: 202-566-0474
Fax: 202-566-0469

Deputy Work Assignment Manager:
Clarence Lewis
US EPA National Program Chemicals Division
Lead, Heavy Metals and Inorganics Branch(7404T)
1200 Pennsylvania Avenue, NW
Washington, DC 20460
Ph: 202-566-1243

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-05

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-W-09-024	06/23/2009 To 06/22/2012 Base Option Period Number 2	PCB Support

Contractor: BATTELLE MEMORIAL INSTITUTE

Specify Section and paragraph of Contract SOW:

Purpose:
- ☐ Work Assignment
- ☐ Work Assignment Amendment
- ☒ Work Plan Approval
- ☐ Work Assignment Close-Out
- ☐ Incremental Funding

Period of Performance: From 07/18/2011 To 06/22/2012

Comments:
The technical and financial work plan dated August 12, 2011.

☐ Superfund — Accounting and Appropriations Data — ☒ Non-Superfund

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

SFO (Max 2): ☐

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
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Authorized Work Assignment Ceiling

Contract Period: 06/23/2009 To 06/22/2012	Cost/Fee: $0.00	LOE:
This Action:	$0.00	
Total:	$0.00	

Work Plan / Cost Estimate Approvals

Contractor WP Dated: 08/12/2011	Cost/Fee: $66,859.00	LOE: 501
Cumulative Approved:	Cost/Fee: $66,858.00	LOE: 501

Work Assignment Manager Name: Amy Hensley (Signature) (Date)	Branch/Mail Code: Phone Number: 703-305-5084 FAX Number:
Project Officer Name: Cynthia Bowie (Signature) (Date)	Branch/Mail Code: Phone Number: 202-564-7726 FAX Number:
Other Agency Official Name: (Signature) (Date)	Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: Christine Edwards (Signature) 12/21/11 (Date)	Branch/Mail Code: Phone Number: 202-564-2182 FAX Number:

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-05

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-W-09-024	06/23/2009 To 06/22/2012	Technical PCB Support
	Base Option Period Number 2	

Contractor: BATTELLE MEMORIAL INSTITUTE

Specify Section and paragraph of Contract SOW: Tasks

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [ ] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 07/18/2011 To 06/22/2012

Comments:
Work Assignment Initiation - A Technical and Financial Work Plan is required. Currently, there are 476 Professional Labor Hours (PLHs) allocated for this WA.

☐ Superfund — Accounting and Appropriations Data — [X] Non-Superfund

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

SFO (Max 2): ☐

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
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Authorized Work Assignment Ceiling

Contract Period: 06/23/2009 To 06/22/2012 — Cost/Fee: — LOE:

This Action:

Total:

Work Plan / Cost Estimate Approvals

Contractor WP Dated: — Cost/Fee: — LOE:

Cumulative Approved: — Cost/Fee: — LOE:

Work Assignment Manager Name: Amy Hensley (Signature) (Date)		Branch/Mail Code: Phone Number: 703-305-5084 FAX Number:
Project Officer Name: Cynthia Bowie (Signature) (Date)		Branch/Mail Code: Phone Number: 202-564-7726 FAX Number:
Other Agency Official Name (Signature) (Date)		Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: Christine Edwards (Signature)	7/18/11 (Date)	Branch/Mail Code: Phone Number: 202-564-2182 FAX Number:

STATEMENT OF WORK

Contract Number: EP-W-09-024, Option 2

Work Assignment: 2-05

Title: Performance Based Work Assignment -Technical Support for PCB Permits and Document Development

Background:

The Toxic Substance Control Act (TSCA) of 1976 requires EPA to develop rules to regulate the manufacture, processing, distribution in commerce, use, or disposal of chemical substances. Section 6(e) of the Act specifically names polychlorinated biphenyls (PCBs), requiring rules to specify methods for the disposal of PCBs.

Regulations promulgated in Subpart D of 40 CFR 761 authorize EPA Headquarter to issue PCB disposal approvals, valid nationwide, to mobile disposal facilities and fixed facilities as well as issue PCB alternative decontamination approvals. TSCA regulations delegate signatory authority to the Assistant Administrator of the Office of Solid Waste and Emergency Response (OSWER) for permits issued by EPA Headquarters. In FY 2008, EPA transferred the administration and implementation of the Toxic Substances Control Act's (TSCA) Polychlorinated Biphenyl (PCB) Cleanup and Disposal Program from the Office of Prevention, Pesticides and Toxic Substances (OPPTS) to the Office of Solid Waste and Emergency Response (OSWER).

Individuals seeking approvals to dispose of PCBs or decontaminate PCB-contaminated materials must submit a permit application and a demonstration plan for EPA review. EPA reviews the permit application for completeness. The application must include the demonstration plan indicating a demonstration can be performed safely with a good probability of success. Once the application review is complete, EPA will require the company to demonstrate the operation of its technology under reasonable worst case operating conditions. EPA will issue an approval to operate the alternative disposal or decontamination technology once the company has demonstrated their PCB disposal or decontamination process is effective, the technology is capable of processing PCB material without frequent breakdowns, and does not present unreasonable risks to health and the environment.

Typically, PCB disposal technologies are classed into three categories, (a) incineration, (b) thermal alternative technology, and (c) non-thermal alternative technology. Alternative technologies include surface and aqueous media decontamination processes. The alternative disposal technology must be demonstrated in the presence of EPA evaluators. During the demonstration, EPA will collect samples of materials before and after treatment to confirm the PCBs were destroyed. Upon confirmation of PCB destruction, EPA will issue an approval for the technology.

I. Purpose:

Any person wishing to dispose of PCBs must use approved methods and must obtain an approval. Several methods for disposal and decontamination are listed in §761, but alternative technologies for disposal and decontamination may be used if an approval is granted by the EPA. Persons can apply to the EPA for approval of PCB disposal by non-thermal alternative methods (§761.60(e)), alternative decontamination procedures (§761.79(h)), thermal alternative methods (§761.60(e)), and incineration (§761.70). EPA must confirm the PCB Disposal and decontamination technologies demonstrated by permit applicants comply with EPA requirements. To accomplish this, EPA will require contractor support.

At the direction of the Work Assignment Manger, the Contractor shall prepare and ship sampling kits to sites designated by the WAM. EPA will collect samples during the PCB Disposal or Decontamination Demonstration, pack the samples, and send the samples to the Contractor. The Contractor shall analyze samples collected by EPA to confirm the technologies destroy and/or remove PCBs from various waste feed matrices or materials. The Contractor shall prepare QA samples in a variety of matrices for EPA to evaluate the laboratory facilities to be used by the applicant during commercial PCB Disposal or Decontamination operation or during the PCB Disposal or Decontamination demonstration. The Contractor shall transmit preliminary analytical results of the demonstration samples to EPA. These preliminary results will assist EPA in determining the efficacy of the new disposal or decontamination technologies.

The Contractor shall develop a document that will help persons apply for approvals for alternative technologies under §761. The document will discuss requirements for approval applications, demonstration test plans, demonstration test reports, as well as describe the approval process and how to conduct a demonstration. Other elements may be requested by the WAM.

The contractor shall also develop other documents that will provide information to the regulated community on how to cleanup and dispose of PCBs in compliance with the PCB Regulations (§761). These documents will help persons apply for disposal and cleanup PCB approvals from the EPA.

II. Scope of Work:

A. PCB Disposal and Decontamination Demonstrations. There are approximately five possible demonstrations covered under this Work Assignment. Generally, EPA collects a set of samples for starting material or feed, samples of treated material and samples of process waste. At times, in addition to the standard samples for feed, process streams, and process waste, questionable process or waste streams may be sampled to clarify regulatory status of the material. Also, blind QA audit samples may, at the direction of the WAM, be shipped to the laboratory selected to perform the permit applicant's product analysis during commercial operations. For the different types of

demonstrations, the estimated number of samples and type of samples to be collected by EPA for analysis are listed below. Possibility exists that one of the demonstrations may involve sampling and analysis of low radioactive material.

1 – Alternative Thermal technology approval. Feed and treated material may contain low radioactive substances.
Samples: Liquid or non-liquid feed (3), treated material (3), water discharge (3) , QA samples (3).

2 – Alternative Non-thermal technology approval. Feed and treated material may contain low radioactive substances.
Samples: Liquid or non-liquid feed material (3), treated material (3), water discharge (3), QA samples (3).

3 – Alternative decontamination approval.
Samples: Wipe samples before treatment (3), wipe samples after treatment (3), QA samples (3), water discharge (3).

B. Documents on PCB Cleanup and Disposal – PCB Any person wishing to dispose of PCBs must use approved methods and must obtain an approval. The person must first submit an application package to their EPA Regional Office or to EPA Headquarters, depending on the signing authority for their approval. For disposal approvals, demonstrations are often required, which involve submission of test plans and test results to the EPA. This Work Assignment covers the development of documents that describe the components of and level of detail needed for PCB disposal or cleanup approvals.

B. Work Tasks

Task 1. Task Management

The Contractor shall prepare and submit a work plan. Work under this task shall include participating in conference calls, meetings, preparing the monthly progress report and other task management. This assignment requires a QA/QC plan. EPA will review and comment on the work plan and the QA/QC plan within 45 days. This statement of work also requires the use of TSCA CBI.

Task 2. Preparation of a QA/QC Plan.

The Contractor shall prepare a Quality Assurance Project Plan for the analysis of all collected samples during the duration of this work assignment. The Quality Assurance Plan will follow the format and requirements as specified in "EPA Requirements for Quality Assurance Project Plans (QA/R-5)" (2001, EPA/240/B-01/003)[1]. A draft of that

[1] http://www.epa.gov/quality/qs-docs/r5-final.pdf

plan will be submitted for review by the WAM. The Contractor shall incorporate the comments and submit a final version of the Quality Assurance Project Plan.

NOTE: The tasks below represent all of the possible items that may be required by EPA to support the PCB cleanup and disposal program. Written technical direction will be provided by the WAM which will specify the items and quantities needed for each permit.

Task 3. Sample Collection and Analysis

A. EPA will observe on-site the PCB Disposal or Decontamination Demonstrations and will collect samples and transfer the samples to the Contractor. The Contractor shall analyze the samples appropriately, as outlined below.

(1) For analysis of polychlorinated biphenyls (PCBs), the Contractor shall analyze samples for classes of PCB compounds named Aroclor. These compounds include but are not limited to the following:

Aroclor 1242	Aroclor 1264
Aroclor 1254	Aroclor 1016
Aroclor 1260	

(2) For analysis of PCBs, the Contractor shall provide analytical instrument capability and methodologies to analyze and to identify the 209 congeners of polychlorinated biphenyls.

(3) For analysis of PCBs, the Contractor shall provide analytical instrument capability and methodologies to analyze and to identify PCBs, separating and quantitating the identified PCBs in homologs from mono- to deca-chlorinated biphenyls. The analytical standard to be used shall be the Dry Color Manufacturer Association (DCMA) standard or equivalent.

(4) The Contractor shall transmit analytical results of the demonstration samples to EPA in three stages. First, the raw data will be submitted by telephone or email as directed by the WAM. These results will assist EPA in determining the efficacy of the new disposal or decontamination technologies. Second, the Contractor shall prepare a draft digital report. Third, after receiving comments from the WAM, the Contractor shall then prepare the final analytical results which incorporate the WAM's comments.

(5) The Contractor shall analyze for other pollutants of interest as directed by the WAM. For example, PCBs in the U.S. is in short supply. The possibility exists that surrogates for PCBs may necessarily be used

during PCB Disposal or Decontamination Demonstration. Should surrogates be used, the Contractor shall analyze samples for the surrogates. An example of a surrogate is trichlorobenzene.

B. Sample Media. The Contractor shall implement analytical methods suitable to the medium of interest. Examples of media include crankcase oil; mineral oil; solvents such as ethylene glycol; soils such as clay, sediment or sand; fly ash; and clinkers.

C. Sampling Kit.

(1) The Contractor shall provide sampling kits (described below) for each demonstration suitable for the collection of samples of various media, but not limited to bulk solids such as soil; and bulk liquids such as fuel oil, solvents and water.

(2) The Contractor shall provide a sampling kit suitable for the collection and analysis of samples from porous surfaces (concrete, paint) and non-porous surfaces (metal).

D. For thermal technologies including incineration, the Contractor may be requested by the WAM to observe the collection of samples from various process streams and obtain split samples for analysis by the Contractor.

E. The Contractor may be requested to provide personnel with appropriate experience and appropriate certificates to take the samples for any of the technologies and any of the media.

F. The Contractor shall submit a preliminary analysis to the WAM for review and comment. Upon receipt of the comments the Contractor shall incorporate the comments into the final report.

Task 4. PCB Disposal and Decontamination Demonstration Requiring Review of Sampling Protocols

A. For thermal technologies including incineration, the Contractor may be requested by the WAM to review the applicant's demonstration trial burn plan, to determine/plan the work schedule. Contractor should already be familiar with the process and equipment, from previous work with identical incinerator equipment.

B. For thermal technologies including incineration, the Contractor may be requested to determine if the applicants' stack emission sampling protocols to be used during the trial burn comply with EPA standards.

Task 5. Sampling Kit for PCB Disposal and Decontamination Demonstrations

The Contractor shall provide, at the direction of the WAM, a sampling kit for EPA PCB Disposal or Decontamination technology evaluators. Sampling items are to be shipped in a cooler ranging in size from one (1) gallon to ten (10) gallons, as appropriate. Packing material must be provided and used as appropriate to minimize breakage of items.

At minimum, the following items shall be provided in the shipping cooler:

A. Traceability Log Forms (3 sheets minimum)
B. Quadruplicated bar codes in self-adhering format (3 sheets - 15 codes minimum per sheet). Traceability forms must accommodate bar codes and sample description.
C. Labels for sample containers to identify samples.
D. Disposable gloves (12 pairs minimum)
E. Wide mouth 100 ml. sampling jars, or 40 ml. vials "VOC" sampling type, or a mixture of jars and vials as specified by WAM.
F. Spatulas, two medium size, metal
G. One fine tip marker, waterproof
H. Two writing pens, ball point or fine felt tip
I. "Blue ice" or chemical ice pack for sample preservation
J. Evidence tape, 2 feet in length
K. Shipping bill or air bill prepared for shipping samples to Contractor on overnight basis
L. "Zip locking" plastic bag to protect documents
M. Extra sampling containers in case of breakage or process anomaly
N. Paper towels, e.g. "Kimwipes"

Blind QA audit samples shall be prepared to evaluate laboratory(s) designated by applicants to analyze samples for the demonstration or for commercial operations. The audit sample(s) may be prepared using various media such as sand, oil or water. Optional items below, which are required at times, specified by the WAM, for specific projects.

O. One-liter jars for aqueous samples, quantity to be specified.
P. Wipe Sampling Kit:
   (1) Folded cotton gauze pad (e.g. 4"x4"), inserted in 100 ml wide mouth jar
   (2) Gauze pad saturated with solvent (e.g. hexane)
   (3) Template for wiping 100 centimeter square area or as specified
   (4) Template disposal or reusable, as specified
   (5) Quantity to be specified by WAM
   (6) Solvent to be specified by WAM
Q. Spoon or other instruments for sampling

Task 6. Further Development of Document on PCB Cleanup and Disposal Approval Applications

Further develop and update a document entitled "Guidelines for Approval Applications and Demonstration Test Plans for PCB Disposal by Non-Thermal Alternative Methods, Thermal Alternative Methods, and Incineration."

The Contractor shall develop a final document which may be distributed to persons desiring a PCB Disposal Approval. The Contractor shall incorporate comments from Regional Offices and Headquarters on the draft documents, as directed by the WAM.

Task 7. Develop documents on PCB Cleanup and Disposal.

As directed by the WAM, the Contractor shall develop documents which may be distributed to persons desiring PCB cleanup or disposal approvals. The contractor shall prepare a draft of the document. The Contractor shall incorporate comments from Regional Offices and Headquarters into the draft document, as directed by the WAM.

III. Deliverables:

Task 1. Within 30 days of issuance of contract, the Contractor shall submit a Work Plan for review and acceptance.

Task 2. Within 30 days of issuance, the Contractor shall submit a QA/QC Plan for review and acceptance.

Task 3. Results. Within two weeks of receipt of samples unless otherwise approved by the WAM, Contractor shall submit raw data of the sample chemical analysis. These raw data shall be transmitted in the form of a phone call or email as directed by the WAM. Within three weeks of the receipt of the samples the Contractor shall provide a draft digital report of the chemical analysis. When the Government provides comments on the draft digital report the Contractor shall produce a final report within 30 days of the receipt of the Government's comments. The final report shall be in pdf or other format (.doc) as specified by the WAM.

Task 4. Within 20 days of receipt of a copy of the permit applicant demonstration plan, the Contractor will review and submit a summary report of the demonstration plan.

Task 5. Within 7 days of request by the WAM, the Contractor will ship a sampling kit to the demonstration site for use by EPA or its representative.

Task 6. Within 30 days of receiving the draft document to be developed, the Contractor shall give a draft for EPA review, both hard copy and electronic copy. Upon receipt of comments from the WAM, the Contractor shall incorporate those comments within 30 days. After the WAM specifies that no further comments are forthcoming, the Contractor shall submit a final document in Microsoft Word format or other format as specified by the WAM.

Task 7. Within 30 days of receiving direction from the WAM to develop and update the document, the Contractor shall give a draft for review, both hard copy and electronic copy. Upon receipt of comments from the WAM, the Contractor shall incorporate those comments within 30 days. After the WAM specifies that no further comments are forthcoming, the Contractor shall submit a final document in Microsoft Word format or other format as specified by the WAM.

A Work Plan is required.

EPA will approve the work plan within 45 days.

A QA/QC plan is required

CBI does apply.

Work previously performed under this WA shall not be duplicated.

This work assignment relates to "Task 3. Sample Collection and Analysis" and "Task 4. PCB Disposal and Decontamination Demonstrations Requiring Review of Sampling Protocols" of the current Statement of Work (SOW) of the contract.

The contractor's performance shall be judged by 1) timeliness in meeting the four week deadline for submission and 2) completeness by including all the required QAP elements. See section on Performance Measures below.

Performance Measures:

The government shall review the promptness of submitting the Field Study QAP as required in this WA. If the contractor is late by more than 14 calendar days, from the due date specified in the WA, on the QAP, the government shall take a 10% reduction in the fee associated with the QAP. The reduction shall be applied to all fees, both the paid fee and unpaid fee.

The government shall review the completeness of the QAP as required in this WA. If the contractor's QAP is missing one or more of the required elements, as listed in the WA, the government shall take a 10% reduction in the fee associated with this WA. The reduction will be applied to all fees, both the paid fee and the unpaid fee.

The government shall review the results of the physical testing as required in the Tasks of this WA. If the contractor has failed to perform the physical testing in accordance with the latest approved QAP for that element, the government shall take a 30% reduction in the fee associated with that work. The reduction will be applied to all fees, both the paid fee and the unpaid fee.

IV. Period of Performance:

This work assignment will start on the date of the contracting officer's signature and extend through June 22, 2012. The work assignment can end earlier but cannot go past June 22, 2012.

V. Level of Effort:

This work assignment shall require 476 professional hours.

VI. EPA Contact:

Work Assignment Manager:

Winston Lue
Mail Code 5303P
1200 Pennsylvania Ave NW
Washington, DC 20460
Phone: (703)305-1617
Fax: (703)308-8638

Courier Service Address:
Potomac Yard North
2733 S. Crystal Drive
Room N-6331
Arlington, VA 22202

Deputy Work Assignment Manager:

Amy Hensley
Mail Code 5303P
1200 Pennsylvania Ave NW
Washington, DC 20460
Phone: (703)305-5084
Fax: (703)308-8638

Courier Service Address:
Potomac Yard North
2733 S. Crystal Drive
Room N-6324
Arlington, VA 22202

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-06

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-W-09-024	06/23/2009 To 06/22/2012	Local Lead Data
	Base Option Period Number 2	

Contractor: BATTELLE MEMORIAL INSTITUTE

Specify Section and paragraph of Contract SOW:

Purpose:
- ☐ Work Assignment
- ☐ Work Assignment Amendment
- ☒ Work Plan Approval
- ☐ Work Assignment Close-Out
- ☐ Incremental Funding

Period of Performance: From 06/23/2011 To 06/22/2012

Comments:
This action corrects the approval amounts based on the contractor's work plan dated 01/10/2012.

☐ Superfund — Accounting and Appropriations Data — ☒ Non-Superfund

SFO (Max 2): ☐

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

	Contract Period	Cost/Fee	LOE
	06/23/2009 To 06/22/2012	$0.00	
This Action:		$150,000.00	
Total:		$150,000.00	

Work Plan / Cost Estimate Approvals

		Cost/Fee	LOE
Contractor WP Dated:	01/10/2012	$150,176.00	1,003
Cumulative Approved:		$150,175.00	1,003

Work Assignment Manager Name: Brad Schultz	(Signature)	(Date)	Branch/Mail Code: Phone Number: 919-541-3881 FAX Number:
Project Officer Name: Cynthia Bowie	(Signature)	(Date)	Branch/Mail Code: Phone Number: 202-564-7726 FAX Number:
Other Agency Official Name	(Signature)	(Date)	Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: Christine Edwards	Christine Edwards (Signature)	5/4/2012 (Date)	Branch/Mail Code: Phone Number: 202-564-2182 FAX Number:

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-06

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-W-09-024	06/23/2009 To 06/22/2012	Local Lead Data
	Base Option Period Number 2	

Contractor: BATTELLE MEMORIAL INSTITUTE

Specify Section and paragraph of Contract SOW:

Purpose:
- ☐ Work Assignment
- ☐ Work Assignment Amendment
- ☒ Work Plan Approval
- ☐ Work Assignment Close-Out
- ☐ Incremental Funding

Period of Performance: From 06/23/2011 To 06/22/2012

Comments:
This action approves the revised work plan submitted on January 10, 2012.

☐ Superfund — Accounting and Appropriations Data — ☒ Non-Superfund

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

SFO (Max 2) ☐

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

Contract Period: 06/23/2009 To 06/22/2012 — Cost/Fee: $0.00 — LOE:

This Action:

Total:

Work Plan / Cost Estimate Approvals

Contractor WP Dated: 01/10/2012 — Cost/Fee: $150,176.00 — LOE: 982

Cumulative Approved: — Cost/Fee: $150,175.00 — LOE: 982

Work Assignment Manager Name: Brad Schultz (Signature) (Date)	Branch/Mail Code: Phone Number: 919-541-3881 FAX Number:
Project Officer Name: Cynthia Bowie (Signature) (Date)	Branch/Mail Code: Phone Number: 202-564-7726 FAX Number:
Other Agency Official Name: (Signature) (Date)	Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: Christine Edwards Christine Edwards (Signature) 2/8/2012 (Date)	Branch/Mail Code: Phone Number: 202-564-2182 FAX Number:

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-06

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-W-09-024	06/23/2009 To 06/22/2012	Local Lead Data
	Base Option Period Number 2	

Contractor	Specify Section and paragraph of Contract SOW
BATTELLE MEMORIAL INSTITUTE	Task I, Data Collection and Analysis

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [ ] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 06/23/2011 To 06/22/2012

Comments:
Work Assignment Initiation - There are 1,100 Professional Labor Hours estimated for this Work Assignment.

☐ Superfund — Accounting and Appropriations Data — [X] Non-Superfund

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

SFO (Max 2): ☐

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

Contract Period:	Cost/Fee:	LOE:
06/23/2009 To 06/22/2012		
This Action:		
Total:		

Work Plan / Cost Estimate Approvals

	Cost/Fee:	LOE:
Contractor WP Dated:		
Cumulative Approved:		

Work Assignment Manager Name: Brad Schultz (Signature) (Date)	Branch/Mail Code: Phone Number: 919-541-3881 FAX Number:
Project Officer Name: Cynthia Bowie (Signature) (Date)	Branch/Mail Code: Phone Number: 202-564-7726 FAX Number:
Other Agency Official Name: (Signature) (Date)	Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: Christine Edwards Christine Edwards 9/30/11 (Signature) (Date)	Branch/Mail Code: Phone Number: 202-564-2182 FAX Number:

Contract EP-W-09-024

WA 2-06

Statement of Work: Supplementing local lead data with modeled estimates for community-level assessments

Background: Some cities or counties undertake extensive blood-lead screening which, among other things, allows for a characterization of childhood lead exposure in their communities. Such screening, however, is not universally conducted, and most communities are left without an understanding of their local childhood lead exposure. Many community groups, such as a number of grantees in the EPA Community Action for a Renewed Environment (CARE; www.epa.gov/care) program and in environmental justice efforts, are interested in knowing their community's lead exposure and its impact. In addition to providing lead exposure information to communities, it is anticipated that the results could provide information for identifying communities at risk, for assistance in targeting enforcement, and related efforts. This work assignment is intended to assist in supplementing modeling work being conducted in-house in EPA's Office of Research and Development, National Exposure Research Laboratory (NERL).

EPA/ORD is conducting research to estimate blood-lead levels at the individual and census tract level nationally from NHANES data and other data sources. The intent is to provide a fairly rough estimate where only limited blood-lead screening data is available for communities, and the Regions they serve (so they can consider childhood lead exposure along with other issues in risk prioritization efforts in the CARE program) and for other uses. A general description of these efforts may be found at epa.gov/heasd/communities and www.epa.gov/heasd/c-ferst, including the journal articles referenced there, especially V.G. Zartarian, B.D. Schultz, T.M. Barzyk, M. Smuts, D.M. Hammond, A.M. Geller (2011), "The EPA's Community-Focused Exposure and Risk Screening Tool (C-FERST) and Its Potential Use for Environmental Justice Efforts," accepted for publication by the *American Journal of Public Health* and Zartarian V., and Schultz B. (2010), "The EPA's Human Exposure Research Program for Assessing Cumulative Risk in Communities," *Journal of Exposure Science and Environmental Epidemiology 20(4):* 351–358. C-FERST is growing in visibility and demand, and supports the Administrator's priorities, including (1) Cleaning up our communities, (2) Expanding the conversation on environmentalism and working for environmental justice, and (3) Building strong state and tribal partnerships. This specific work assignment is intended to parallel such efforts as those of the National-scale Air Toxics Assessment (epa.gov/nata) for air toxics, radon and environmental tobacco smoke (ETS), with the preliminary work described in Chahine T, Schultz B, Zartarian V, Subramanian S V, Spengler JD, Hammitt JK, Levy JI, "Modeling geographic and demographic variability in residential concentrations of environmental tobacco smoke using national datasets," *Journal of Exposure Science And Environmental Epidemiology* (2011).

It is critical that modeling products be evaluated with real-world measurements data, which this proposed effort does. Model evaluation is a central scientific goal of C-FERST

(epa.gov/heasd/c-ferst). Testing modeling results with childhood lead exposure measurements data is valuable given the extensive Regional and community interest and the remaining health burden from lead, which has not been well-defined to date especially in high-risk communities. EPA Regions are also interested in targeting resources and enforcement activities in high risk areas, as defined by environmental exposure indicators which have relevance to health effects; these indicators (that is, the modeled lead exposure estimates) will be more valuable if evaluated against local data. Additionally, in a few locations there is local blood-lead data, and some of these locations appear to be high risk areas. It will be beneficial to have an integrated approach which can utilize both nationally-modeled estimates and local data rather than a piecemeal approach.

Statement of work: The contractor shall compare NERL-modeled estimates of childhood lead exposure at the census block group or census tract level. (The NERL estimates will be derived from a combination of data from the National Health and Nutrition Examination Survey (NHANES), US Census, and environmental estimates.) Bradley Schultz of ORD/NERL will provide the contractor with the local-scale estimates or model form and parameters with which to calculate the local scale estimates. It is anticipated that census tract level estimate will be in the form of a census tract geometric mean (in micrograms/dL) and that model-based distributions of lead exposures will be calculated; those will then be compared with the local exposure data which Battelle has or will obtain. The local data will, at minimum, include Springfield, MA, the rest of MA, and at least one other state or local area, agreed upon with the Contracting Officer's Representative (COR). In addition to Springfield, MA, CARE Regional case studies are beginning in Portland, ME, Brooklyn, NY, and Minneapolis, MN, and these would be ideal settings from the standpoint of rapid application.

In addition to model comparison, the contractor shall implement a Bayesian updating of the national model with local measurement data. The model needs to be simple enough for application in other communities by EPA Regional Offices, and local health departments of a mid-size or larger city or county (i.e., population of greater than 200,000). The contractor shall implement this "updating" at the community, or collection of census block groups, as well as the individual level. The contractor should be aware that updating is being performed for several environmental stressors. One online implementation at the *individual* level is hosted on the Columbia University website concerning radon (http://www.stat.columbia.edu/~radon/).

The work shall be broken into four tasks.

Task One
The first task is to produce the contractor workplan.

Task Two
The second task is to evaluate the ORD/NERL screening-level model at the census tract level.

Task Three
The third task is to develop a model which combines the screening-level model with locally-collected data to provide distributions of estimated blood-lead levels at the census tract level; the resolution of the model shall be at least in 1 microgram/dL increments and shall include considerations of seasonal trends and age (cf., for example, Seasonal Trends in Blood Lead Levels in Milwaukee (1996), EPA Report Number 747-R-95-010 and "Estimated Change in Blood Lead Concentration in Control Populations," Niemuth NA, Wood BJ, Schultz BD, Archives of Environmental Health (2001) Vol 56 (6): 542-551). Although this model should be statistically sound, such as using Bayesian principles, it is important that it be implementable by EPA Regional offices and large to mid-size local health departments as well.

Task Four
The fourth task is to extend the model to the individual level, suitable for use in epidemiologic studies such as the National Children's Study. For the fourth sub-task, ease of implementation is less of a consideration, but the data is likely to be limited to only two measurements during early childhood. Demonstration of the proof of concept of sub-task 4 shall be suitable for publication in a peer-reviewed scientific journal as in subtasks 2 and 3.

If not readily available to the contractor, the WAM will provide any of the references to the contractor and will obtain contractor employee access for those requested to perform work under this work assignment to the Community-Focused Exposure and Risk Screening Tool (C-FERST). Description of C-FERST can be found at: www.epa.gov/heasd/c-ferst. The (password-protected) link on the Internet is at: https://cfpub.epa.gov/CFERST .

There are 1100 Professional Labor Hours estimated for this work.

A Work Plan is required

CBI does not apply

A QAQC plan is not required.

The work relates to Task I Collection and Analysis of Data of the current Statement of Work

Deliverables:

Task One: The contractor work plan.
Task Two: Evaluation of the ORD model with local data in at least two cities, sufficient to support a peer reviewed model evaluation paper for publication in a peer reviewed scientific journal. The lead author is the WAM, and contractor staff will be eligible for co-authorship in accordance with journal guidelines.
Task Three: A working model to incorporate locally-collected data into the screening-level model. The model shall include guidance to allow for EPA Regional and other staff to operate the model. The model shall also be described in an article suitable for publication in a peer-reviewed scientific journal. Deliverables two and three are the main efforts of this work assignment.
Task Four: A model which estimates individual childhood lead curves as a function of proxy information and one or two blood-lead measurements collected. The results shall be reported as an article suitable for publication in a peer-reviewed scientific journal.

The work shall begin when signed by the Contracting Officer and end on June 22, 2011.

Contacts:
Work Assignment Manager
Brad Schultz
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FILE

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-07

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-W-09-024	Base Option Period Number 2 — 06/23/2009 To 06/22/2012	Fibers & Organic Chemicals

Contractor: BATTELLE MEMORIAL INSTITUTE

Specify Section and paragraph of Contract SOW:

Purpose:
- ☐ Work Assignment
- ☐ Work Assignment Amendment
- [X] Work Plan Approval
- ☐ Work Assignment Close-Out
- ☐ Incremental Funding

Period of Performance: From 06/23/2011 To 06/22/2012

Comments:
The contractor's technical and financial work plan is approved.

☐ Superfund — Accounting and Appropriations Data — [X] Non-Superfund

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

SFO (Max 2): ☐

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Projec (Max 8)	Cost Org/Code (Max 7)
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

	Cost/Fee	LOE
Contract Period: 06/23/2009 To 06/22/2012	$0.00	
This Action:	$0.00	
Total:	$0.00	

Work Plan / Cost Estimate Approvals

	Cost/Fee	LOE
Contractor WP Dated: 07/20/2011	$357,371.00	2,039
Cumulative Approved:	$357,371.00	2,039

Work Assignment Manager Name: Tom Simons	(Signature)	(Date)	Branch/Mail Code: / Phone Number: 202-566-0517 / FAX Number:
Project Officer Name: Cynthia Bowie	(Signature)	(Date)	Branch/Mail Code: / Phone Number: 202-564-7726 / FAX Number:
Other Agency Official Name	(Signature)	(Date)	Branch/Mail Code: / Phone Number: / FAX Number:
Contracting Official Name: Christine Edwards	(Signature)	8/4/11 (Date)	Branch/Mail Code: / Phone Number: 202-564-2182 / FAX Number:

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-07

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-W-09-024	06/23/2009 To 06/22/2012 Base Option Period Number 2	See attached SOW

Contractor: BATTELLE MEMORIAL INSTITUTE

Specify Section and paragraph of Contract SOW:

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [ ] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 06/23/2011 To 06/22/2012

Comments: Work Assignment Initiation; there are 817 Professional Labor Hours (PLHs) estimated for this Work Assignment.

☐ Superfund — Accounting and Appropriations Data — [X] Non-Superfund

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

SFO (Max 2): ☐

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

	Cost/Fee:	LOE:
Contract Period: 06/23/2009 To 06/22/2012		
This Action:		
Total:		

Work Plan / Cost Estimate Approvals

	Cost/Fee:	LOE:
Contractor WP Dated:		
Cumulative Approved:		

Work Assignment Manager Name: Tom Simons (Signature) (Date)		Branch/Mail Code: Phone Number: 202-566-0517 FAX Number:
Project Officer Name: Cynthia Bowie (Signature) (Date)		Branch/Mail Code: Phone Number: 202-564-7726 FAX Number:
Other Agency Official Name: (Signature) (Date)		Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: Christine Edwards Christine Edwards (Signature)	6/21/11 (Date)	Branch/Mail Code: Phone Number: 202-564-2182 FAX Number:

CONTRACT NUMBER: EP-W-09-024

WORK ASSIGNMENT NUMBER: 2-07

Developing technical information to support the management of fibers and national program organic chemicals

I. Background/Purpose

The National Program Chemicals Division (NPCD) in EPA addresses the regulation and management of fibers and organic chemicals. The regulation and management can include the development of technical analysis methods, development of guidance, generating technical information to support and initiate rulemaking, other administrative actions, and policy decisions.

Currently EPA's attention is on polychlorinated biphenyls (PCBs) and amphibole mineral contaminants in vermiculite insulation from a mine in Libby, Montana. In the future NPCD anticipates the need to develop technical information for other chemicals (phthalates, mercury, and others). There are four initial tasks for the work assignment. Work on these tasks related to these tasks was completed in work assignments 1-12, 1-14, and 1-16 in the previous contract year. No work shall be duplicated. The first two tasks of this Statement of Work address PCBs. The third task addresses amphibole mineral contaminants in vermiculite insulation from a mine in Libby, Montana . The fourth task addresses evaluating test methods for formaldehyde.

NPCD anticipates additional tasks for this work assignment later in the contract year.

II. Scope of Work by Task

Prepare a work plan for Tasks 1 – 4.

Task 1 **PCB Use Rulemaking Assessments**

Purpose:

NPCD is developing a proposed rule to evaluate and update the regulations for the use of PCBs. This work assignment is intended to supply technical information to assist the developers of the regulation to make findings related to the balancing of risk and cost of implanting the regulations.

1. Background

High concentration PCB liquids are authorized for use with some restrictions. NPCD is looking at potentially further restricting uses or eliminating uses based on the risk from certain hypothetical exposure scenarios. NPCD is also interested learning about PCB exposure scenarios and studies in the open literature. There are concerns

about PCB s being disproportionately used in economically disadvantaged and low income areas.

2. Scope of Work

Subtask 1-1. Using the existing literature, develop a human health and environmental impacts paper on the various PCB aroclors/congeners that are used in the items (e.g., transformers, large capacitors, etc.) subject to the proposed rule. The WAM will provide a complete list of items included in the proposed rule.

Subtask1-2. For each PCB containing item included in the proposed rule develop dossiers on each that includes a description of each of three items (transformers, large capacitors, and small capacitors), how it was used, how much and at what concentration the PCBs are in the item, how many currently exist, what is their average life expectancy, what are the available substitutes for PCBs in these items, what are the potential exposure (dermal, inhalation and ingestion) scenarios (e.g., a spill of PCBs into drinking water or on a school play ground, fluorescent light ballasts that leak in a classroom, transformer fires), and any specific examples of incidents where items have failed and exposures have occurred. Include, where possible, costs that were incurred to clean up such spills or fires. The WAM will provide some information to be included in these dossiers and the contractor should conduct a literature search to supplement this information. Each EPA PCB Regional coordinator should also be contacted regarding examples of failures and subsequent exposures that may have occurred in their region. The WAM will provide a list of the PCB Regional coordinators.

Subtask 1-3. Deliverable – The contractor shall submit to the WAM, one dossier at a time for each of the products to be banned. The first dossier should be on transformers the second on fluorescent light ballasts. The first dossier should be submitted in draft one month after approval of the work plan. Within two calendar weeks NPCD will review the first draft dossier, make written comments, and submit the written comments back to the contractor for revision. The contractor shall revise the dossier based on the WAM's comments within one week of receiving them. The second draft dossier should be submitted within two weeks of the completion of the first dossier. The contractor shall incorporate the WAM's comments on the second dossier within one week of receiving them.

Subtask 1-5 The contractor shall estimate the number of fluorescent light ballasts still in use and the estimated time they all would be disposed: (a) by attrition and (b) by a ban by 2015. For both attrition based phaseout, determine the current capacity and cost for the disposal of PCB fluorescent light ballasts if they were to

be recycled for metal recovery in a TSCA approved facility, disposed in a chemical waste landfill, and disposed in a TSCA-approved incinerator. For a ban in 2015, estimate whether the current disposal capacity is sufficient to dispose all of the estimated ballasts. If the contractor finds that the current capacity is insufficient for a 2015 ban, the contractor shall determine if it is economically feasible to expand capacity to meet the demand for the number of ballasts expected to be disposed in a ban.

Subtask 1-6 – The contractor shall estimate the capacity and cost for disposing of askaral transformers and 6,000 PCB transformers. The deliverable for this task is due three months after approval of the workplan

Subtask 1-7 Deliverable A draft final Task of the Subtask 1-6 work is due 2 calendar months after approval of the work plan. Within two calendar weeks NPCD will review the draft, make written comments, and submit the written comments back to the contractor for revision. Within four calendar weeks, the contractor shall submit the final Subtask 1-6 report to NPCD.

Subtask 1-8 General Rule Support

Provide rule support in preparation of the NPRM as directed by the work assignment manager. Activities would include, reviewing existing ANPR comments, additional literature searches, *ad hoc* risk assessments, exposure assessments, economic cost/benefit analyses and statistical assessments related to the use of PCBs.

Subtask 1-9 Deliverable: As directed by the work assignment manager.

3. Reference Materials Provided by NPCD

NPCD will provide the following resources

1. The definitions and use regulations at 40 CFR 761
2. NPCD's Transformer registration database
3. Comments to the ANPR
4. Historical exposure and risk assessments used in the development of PCB regulations.
5. Table of data from transformer fires in the 1980s.
6. 1985 Fires Rule.

7. PCBs: Cancer Dose-Response Assessment and Application to Environmental Mixtures EPA/600/P–96/001F September 1996.

8. List of items to be included in the proposed rule.

9. List of PCB Regional Coordinator

Task 2 Guidance for Sampling Vessels for PCBs - New Draft of NPCD Guidance for Sampling Vessels for PCBs

PURPOSE:

The Environmental Protection Agency plans to develop supplementary guidance for determining with statistically-based confidence that a specified percentage of each potential unauthorized use of polychlorinated biphenyls (PCBs) present on specified areas of a vessel, which is destined for continued use, export for use, or export for disposal, is at concentrations less than (<) 50 parts per million (ppm). Specified products manufactured, processed or formulated predominantly within the time period between 1940 and 1980 are listed below. Supplement existing Paint Sampling Guidance by also listing out different testing and sampling methods, where needed, for the various areas of the vessels.

The guidance should take no more than 2 months to complete. Guidance on sampling paint has been largely completed and peer reviewed, but the remaining portions on what would constitute adequately detailed records to document that all materials on the ship were assessed, that given materials on the ship were never suspect, and that older materials that likely contained PCBs were removed and replaced with PCB-free equipment still need to be drafted and reviewed.

1. BACKGROUND:

From its own sampling of vessels and materials from vessels destined to be floating museums, targets for military exercises, and artificial reefs and from the Department of the Navy, NPCD has historical information on the use of liquid and non-liquid PCBs in several different products. Here is a list of the sorts of product categories which have been found to contain PCBs at concentrations $\geq$ 50 ppm.

liquid PCBs:

- hydraulic equipment
- heat transfer fluids
- cutting oil
- vacuum pump oil
- air compressor lubricants

non-liquid PCBs:

- non-conducting materials in electrical cables (such as plastic and rubber);

- gaskets in air handling systems;
- other rubber and felt gaskets;
- thermal insulation material (including fiberglass, felt, foam, and cork);
- sound deadening felt;
- oil-based paints and aluminized paint;
- grouting/caulking;
- adhesives;
- tapes;
- rubber isolation mounts;
- foundation mounts;
- pipe hangers;
- rubber/plastic parts of all sizes and shapes;
- any other materials where plasticizers were used; and
- grease.

PCBs which are not authorized for use are also not authorized for distribution in commerce (transfer, sale, resale, donation, etc.) for use. The only way to determine whether any non-liquid PCBs or all but a few classes of electrical equipment contain PCBs is by chemical analysis.

The National Program Chemicals Division (NPCD) has developed draft guidance for confirming the absences of PCBs at concentrations greater than or equal to (≥) 50 parts per million (ppm) in vessels "Guidance for Sampling and Analyzing Applied Paint on Vessels (Ships) to Determine Presence or Absence of Polychlorinated Biphenyls (PCBs) at Regulated Concentrations" (Attachment 1). This guidance was designed for vessels destined for disposal. The guidance did not address any other unauthorized PCBs in liquid and non-liquid form on vessels; the guidance only addresses the PCBs in paint. NPCD now needs to provide guidance for the owners of vessels which could contain unauthorized PCBs at concentrations greater than or equal to (≥) 50 parts per million (ppm) to be able to determine whether the vessel is authorized for use and distribution in commerce by demonstration of the absence of PCBs at concentrations ≥ 50 parts per million (ppm) in all products on the vessel with an acceptable level of confidence and coverage.

2. Scope of Work:

The contractor shall use the outline provided by NPCD (attachment 1) to fold in the information included in the contractor report provided as a deliverable in Work Assignment 1-14 entitled Updating NPCD Guidance for Sampling Vessels for PCBs dated May 4, 2011 (attachment 2), and the Guidance for Sampling and Analyzing Vessels (Ships) to Determine Presence or Absence of Polychlorinated Biphenyls (PCBs) at Regulated Concentrations (attachment 3).

Deliverables

The contractor shall provide a revised draft by no later than 20 working days following approval of the work assignment. NPCD will review this draft and via email provide comments and technical guidance on how to adjust the draft. No later than 20 working days following receipt of NPCD's comments and technical guidance, the contractor shall revise the draft and submit a second draft to NPCD. NPCD will review the second draft and via email provide comments and technical guidance on how to adjust the second draft. No later than 20 working days following receipt of NPCD's comments and technical guidance on the second draft, the contractor shall revise the seond draft and submit a final draft to NPCD.

Task 3 Beard Shaul Method Validation Study and External Peer Review

Commercial laboratory validation study and external peer review of The Beard-Shaul Method – A Qualitative Transmission Electron Microscope Method to Determine the Presence of Libby Amphibole in Vermiculite Insulation. This method was previously referred to as the Alexandria Method.

1. Purpose and Background:

This task is part of NPCD's development of an analytical method to determine whether the in vermiculite insulation originated from a mine in Libby, Montana. The task addresses two steps in this development process: a validation study and a peer review. NPCD will conduct a validation study for the draft Beard-Shaul Method. The study will involve ten commercial laboratories each analyzing ten vermiculite samples using the draft Beard-Shaul Method, which NPCD will provide to the contractor as part of work assignment. Once the validation study is complete and if successful, NPCD will make any adjustments resulting from the validation study and submit the revised method to the contractor for an external letter peer review by three reviewers. NPCD is tasking the contractor to handle logistics for conducting the validation study and the peer review.

2. Scope of Work:

Subtask 3.1 Manage the logistics of the Method Validation Study by Commercial Asbestos Analysis Laboratories

The contractor shall select ten commercial asbestos analysis laboratories and secure agreements to participate in the validation study to start with sample shipment by the USGS to the laboratories to arrive on or about August 1. The contractor shall prepare a list of mailing addresses for the selected laboratories and submit it to NPCD and USGS. Each participant will be paid (subcontracted?) to analyze ten vermiculite samples in accordance with the draft method. Each laboratory will complete the analysis and report the results to the contractor in writing by August 31. The contractor shall submit to NPCD a report which is an aggregate of the information from all of the

laboratory reports. The contractor report shall include a brief summary of results from the laboratory reports and any significant comments about the effectiveness of the method. The contractor report shall include copies of the individual reports as appendices.

Subtask 3.1 deliverables

1. No later than close of business (COB) on July 22, 2011, the mailing addresses for the selected laboratories to NPCD and Heather Lowers USGS.

2. No later than COB on September 15, 2011, the contractor report of the results of the validation study.

Subtask 3.2: Conduct and Facilitate the Peer Review of the Beard-Shaul Method

The contractor will have the peer review panel selected in the previous years task 1-12 to review the draft Beard-Shaul Method. No later than COB on October 15, 2011, NPCD will provide the contractor an updated draft of the method to provide to the peer reviewers. The contractor shall begin the peer review no later than November 1, 2011 and the peer reviewers will complete their reviews and submit written comments to the contractor no later than COB November 30, 2011. At the conclusion of the peer review, The contactor shall convene conference calls of selected peer reviewers to discuss peer review comments and any questions NPCD may have about the peer review comments. NPCD will provide the contractor with the draft Alexandria method for peer review. The contractor will work with NPCD to develop charge question for the peer review panel to answer. The contractor shall prepare for NPCD a document organizing each peer reviewer's comments by charge questions and a summary of each of those comments. The NPCD WAM holds the discretion to provide additional clarifications or requirements for peer review panel member selection.

Subask 3.2 Deliverables

(1) The contractor shall provide NPCD after receipt of comments from the peer reviewers a document that organizes peer review comments by reviewer and by charge question. The document will also summarize each of the comments

(2) The contractor shall submit a completed draft document that discusses where PCBs are found in school buildings within 30 calendar days of receipt of the work assignment.

Task 4: Conduct Formaldehyde Emissions Testing and Evaluate Test Methods

1. Purpose and Background:

TSCA Title VI establishes formaldehyde emission standards for composite wood products (i.e., hardwood plywood, medium density fiberboard, and particleboard), and directs EPA to issue implementing regulations by January, 2013. TSCA Title VI requires that the emission standards be measured for compliance by quarterly tests pursuant to test methods ASTM E-1333-96 (2002) or ASTM D-6007-02. TSCA Title VI also requires that quality control tests be conducted pursuant to ASTM D-6007-02, ASTM D-5582, or such other test methods as may be established by EPA. Test results conducted using any test method other than ASTM E-1333-96 (2002) must include a "showing of equivalence by means established by the Administrator through rulemaking."

2. Scope of Work:

The contractor will identify sources of variability in the formaldehyde test method ASTM E-1333-96(2002) as well as evaluate precision and bias of ASTM E-1333-96 (2002) using different protocols. The contractor will also evaluate alternative formaldehyde test methods (e.g., ASTM D-6007-02, ASTM D-5582, EN 717-2 (Gas Analysis), DMC (Dynamic Micro Chamber), EN 120 (Perforator), and JIS A 1460 (24-hr dessicator) and methods of determining equivalence or correlation between alternative test methods and ASTM E1333-96 (2002). The contractor will work with NPCD to develop protocols for evaluating the test methods and establishing equivalence.

Task 4 Deliverables

1) The contractor shall provide a list of potential sources of variability in test method ASTM E1333-96 (2002).
2) The contractor shall provide protocols for evaluating test method performance of ASTM E1333-96(2002) to NPCD for review.
3) Upon NPCD approval of test method evaluation protocols, the contractor shall conduct testing using the approved protocols and provide results of the test method evaluation as a report, including tables of emission test results and a summary of conclusions and recommendations for test method improvement.
4) The contractor shall provide protocols for evaluating equivalence or correlation between different formaldehyde test methods for NPCD approval.
5) Upon NPCD approval of the protocols, the contractor shall use the protocols to evaluate correlation between test methods and provide results in a report.

Task 5: Other National Program Chemicals

When directed by the WAM the contractor shall provide research and /or program support to EPA for phthalates, formaldehyde, mercury, and other chemicals.

III. Other Details

A work plan is required.

A QA/QC plan is not required.

CBI does not apply.

This work assignment relates to Tasks III and IV Program Support of the current Statement of Work (SOW) of the contract.

IV. Period of Performance:

This work assignment will start on the date of the contracting officer's signature and extend through June 22, 2012.

V. Level of Effort: 817 hours

VI. NPCD Contacts

WAM – Tom Simons (202-566-0517 / simons.tom@epa.gov)
Alternate WAM – John Smith (202-566-0512 / smith.johnh@epa.gov)

FILE

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-08

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-W-09-024	06/23/2009 To 06/22/2012 Base Option Period Number 2	Existing Cleaning Technologies

Contractor: BATTELLE MEMORIAL INSTITUTE

Specify Section and paragraph of Contract SOW:

Purpose:
- ☐ Work Assignment
- ☐ Work Assignment Amendment
- ☒ Work Plan Approval
- ☐ Work Assignment Close-Out
- ☐ Incremental Funding

Period of Performance: From 06/27/2011 To 06/22/2012

Comments:
The work plan dated 08/11/2011 is approved.

☐ Superfund — Accounting and Appropriations Data — ☒ Non-Superfund

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

SFO (Max 2): ☐

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

	Cost/Fee	LOE
Contract Period: 06/23/2009 To 06/22/2012	$0.00	
This Action:	$0.00	
Total:	$0.00	

Work Plan / Cost Estimate Approvals

	Cost/Fee	LOE
Contractor WP Dated: 08/11/2011	$16,343.00	108
Cumulative Approved:	$16,344.00	108

Work Assignment Manager Name: Christina Wadlington (Signature) (Date)	Branch/Mail Code:	
	Phone Number: 202-566-1859	
	FAX Number:	
Project Officer Name: Cynthia Bowie (Signature) (Date)	Branch/Mail Code:	
	Phone Number: 202-564-7726	
	FAX Number:	
Other Agency Official Name: (Signature) (Date)	Branch/Mail Code:	
	Phone Number:	
	FAX Number:	
Contracting Official Name: Christine Edwards Christine Edwards (Signature) 9/21/11 (Date)	Branch/Mail Code:	
	Phone Number: 202-564-2182	
	FAX Number:	

Work Assignment Form. (WebForms v1.0)

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-08

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-W-09-024	06/23/2009 To 06/22/2012 Base Option Period Number 2	Cleaning Effectiveness

Contractor	Specify Section and paragraph of Contract SOW
BATTELLE MEMORIAL INSTITUTE	Subtask B, Data Analysis, Section1

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [ ] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 06/27/2011 To 06/22/2012

Comments:
Work assignment Initiation - A Technical and Financial Work Plan is required. Currently, there are 106 Professional Labor Hours allocated for this Work Assignment.

☐ Superfund — Accounting and Appropriations Data — ☒ Non-Superfund

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

SFO (Max 2) ☐

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
2										
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4										
5										

Authorized Work Assignment Ceiling

Contract Period:	Cost/Fee:	LOE:
06/23/2009 To 06/22/2012		
This Action:		
Total:		

Work Plan / Cost Estimate Approvals

	Cost/Fee:	LOE:
Contractor WP Dated:		
Cumulative Approved:		

Work Assignment Manager Name: Christina Wadlington (Signature) (Date)	Branch/Mail Code:	
	Phone Number:	202-566-1859
	FAX Number:	
Project Officer Name: Cynthia Bowie (Signature) (Date)	Branch/Mail Code:	
	Phone Number:	202-564-7726
	FAX Number:	
Other Agency Official Name (Signature) (Date)	Branch/Mail Code:	
	Phone Number:	
	FAX Number:	
Contracting Official Name: Christine Edwards for Jami J Rodgers (Signature) 6/27/11 (Date)	Branch/Mail Code:	
	Phone Number:	202-564-2182
	FAX Number:	

Contract #: EP-W-09-024
WA #: 2-08
Change: 0

Title: Continuation of the analysis of the effectiveness of existing cleaning techniques

Purpose: This work assignment is a continuation of work started under Contract Number EP-W-09-024, Work Assignment 1-13. This work assignment does not duplicate any work in the previous work assignment.

I. Background:

On January 2001, the U. S. Environmental Protection Agency (EPA or the Agency) issued a final regulation under section 403 of the Toxic Substances Control Act [TSCA]) (66 FR 1206-1240), as amended by the Residential Lead-Based Paint Hazard Reduction Act of 1992, also known as "Title X," to establish standards for lead-based paint hazards in most pre-1978 housing and child-occupied facilities. The regulation included dust lead hazard standards for floors (including carpeted floors) and interior window sills (§ 745.65(b)) and clearance standards for floors (including carpeted floors), interior window sills, and window troughs (§745.227(e)(8)(viii)). As a result of this rule, the current dust lead hazard standards are 40 $\mu g/ft^2$ for floors based on a weighted average of all wipe samples and 250 $\mu g/ft^2$ for interior windowsills based on a weighted average of all wipe samples.

On August 10, 2009, EPA received a petition from National Center for Healthy Housing, Alliance of Healthy Homes, and the Sierra Club requesting that EPA take action to lower EPA's regulatory lead hazard standard for lead in dust. The petition requested relief under Section 21 of TSCA, 15 U.S.C. § 2620, or if appropriate, under Section 553(e) of the Administrative Procedures Act (APA), 5 U.S.C. § 553(e). On November 2009, EPA granted the request under section 553(e) of the APA.

This work assignment intends continue the analysis of how changes in the dust lead hazard standards, if lowered, would affect work practice standards and cleaning procedures required under the Renovation, Repair and Painting Rule (RRP) and lead paint activities (LBP) (61 FR 45778) for use in a proposed rulemaking. EPA has identified several issues that need to be assessed to support the proposed rulemaking:

- Is the available laboratory and field technology, used to detect lead dust, demonstrated as effective, readily accessible and broadly available?
- Do the work practice standards under the RRP rule consistently clean to a particular level below the current dust lead hazard standards?
- Do the current industry abatement practices consistently clean to a particular level below the current dust lead hazard standards?

II. Scope of Work:

This work assignment will require contractor to continue work under Contract #: EP-W-09-024 WA #:1-13.

Task #1: Data Analysis

Task 1 of this work assignment shall continue Task 5 under Contract #: EP-W-09-024 WA #:1-13. Using knowledge and materials identified in Tasks 2-4 of Contract #: EP-W-09-024 WA #:1-13, the contractor shall complete the analysis in response to the following questions:

1. Is the available laboratory and field technology, used to detect lead dust, demonstrated as effective, readily accessible and broadly available?
2. Do the work practice standards under the RRP rule consistently clean to a particular level below the current dust lead hazard standards (40 $\mu g/ft^2$ on floors or 250 $\mu g/ft^2$ on window sills)?
    a. What level below the current residential dust lead hazard standard do they consistently reach?
    b. Is there additional information that can be taken from the RRP Dust Study?
    c. Are there studies, that States use to require lower dust levels, that give additional information?
    d. What combination of work practices will need to be used to reach a lower level?
    e. Would the prohibition of certain work result in a lower lead dust level?
    f. If existing work practices standards cannot reach candidate standards, will any new studies need to be conducted?
3. Do the current industry abatement practices consistently clean to a particular level below the current dust lead hazard standards?
    a. What level below the current residential dust lead hazard standard do they consistently reach?

Task #2: Technical Program Support _ Program Specific

The contractor shall assist EPA in responding to technical questions on the analysis.

III. Schedule and Deliverables:

The Contractor shall adhere to the following schedule:

Task	Deliverable	Delivery Schedule
1	Draft Final	The contractor shall deliver to the WAM a draft final report based on EPA's comments on the Draft report not later than 10 working days from receiving EPA's comments.
2	EPA Comments on Draft Final	10 days after receiving the draft final report,

		the WAM will deliver to the contractor comments on the report.
3	Final	10 days after EPA's comments are returned, the contractor shall deliver to the WAM a final report for Task 1.

A work plan is required.

A quality assurance plan is not required for this work assignment.

TSCA CBI is not required for the completion of this work assignment.

This work assignment relates to Subtask B, Data Analysis, Section1 of the contract's statement of work.

IV. Period of Performance:

This work assignment will start on the date of the contracting officer's signature and extend through June 22, 2012.

V. Level of Effort:

The level of effort for this work assignment will not exceed a total of 106 professional level hours.

VII. Work Assignment Manager (WAM):

WAM Name: Christina Wadlington
U.S. Environmental Protection Agency
Office of Chemical Safety and Pollution Prevention
Division (Mail Code) 7404T
Washington, DC 20460
Phone: (202) 566-0516

Alt. WAM Name: Marc Edmonds
U.S. Environmental Protection Agency
Office of Chemical Safety and Pollution Prevention
Division (Mail Code) 7404T
Washington, DC 20460
Phone: (202) 566-0758

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-09

☐ Other ☒ Amendment Number: 000001

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-W-09-024	06/23/2009 To 06/22/2012 Base Option Period Number 2	

Contractor: BATTELLE MEMORIAL INSTITUTE

Specify Section and paragraph of Contract SOW:

Purpose:
- ☐ Work Assignment
- ☒ Work Assignment Amendment
- ☐ Work Plan Approval
- ☐ Work Assignment Close-Out
- ☐ Incremental Funding

Period of Performance: From 06/29/2011 To 06/22/2012

Comments:
This amendment releases the cap on cost for this Work Assignment. The total amount approved for this WA is $920,000.00. A revised Technical and Financial Work Plan is required.

☐ Superfund — Accounting and Appropriations Data — ☒ Non-Superfund

Note: To report additional accounting and appropriations data use EPA Form 1900-69A.

SFO (Max 2): ☐

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

Contract Period: 06/23/2009 To 06/22/2012 — Cost/Fee: — LOE:

This Action:

Total:

Work Plan / Cost Estimate Approvals

Contractor WP Dated: — Cost/Fee: — LOE:

Cumulative Approved: — Cost/Fee: — LOE:

Work Assignment Manager Name: E-Marie Wines (Signature) (Date)		Branch/Mail Code: Phone Number: 312-886-6034 FAX Number:
Project Officer Name: Cynthia Bowie (Signature) (Date)		Branch/Mail Code: Phone Number: 202-564-7726 FAX Number:
Other Agency Official Name: (Signature) (Date)		Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: Christine Edwards (Signature) 11/22/11 (Date)		Branch/Mail Code: Phone Number: 202-564-2182 FAX Number:

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-09

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-W-09-024	06/23/2009 To 06/22/2012	Contaminated Sediment Support
	Base Option Period Number 2	

Contractor: BATTELLE MEMORIAL INSTITUTE

Specify Section and paragraph of Contract SOW:

Purpose:
- ☐ Work Assignment
- ☐ Work Assignment Amendment
- ☒ Work Plan Approval
- ☐ Work Assignment Close-Out
- ☐ Incremental Funding

Period of Performance: From 06/29/2011 To 06/22/2012

Comments:
This action approves the work plan submitted on January 4, 2012.

☐ Superfund — Accounting and Appropriations Data — ☒ Non-Superfund

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

SFO (Max 2): ☐

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

Contract Period: 06/23/2009 To 06/22/2012	Cost/Fee: $0.00	LOE:
This Action:	$920,720.00	
Total:	$920,720.00	

Work Plan / Cost Estimate Approvals

Contractor WP Dated: 01/04/2012	Cost/Fee: $1,203,170.00	LOE: 6,157
Cumulative Approved:	Cost/Fee: $1,203,170.00	LOE: 6,157

Work Assignment Manager Name: E-Marie Wines (Signature) (Date)	Branch/Mail Code: Phone Number: 312-886-6034 FAX Number:
Project Officer Name: Cynthia Bowie (Signature) (Date)	Branch/Mail Code: Phone Number: 202-564-7726 FAX Number:
Other Agency Official Name: (Signature) (Date)	Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: Christine Edwards (Signature) 2/8/2012 (Date)	Branch/Mail Code: Phone Number: 202-564-2182 FAX Number:

Work Assignment Form. (WebForms v1.0)

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-09

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-W-09-024	06/23/2009 To 06/22/2012 Base Option Period Number 2	GLNPO - Contaminated Sediment

Contractor: BATTELLE MEMORIAL INSTITUTE

Specify Section and paragraph of Contract SOW:

Purpose:
- ☐ Work Assignment
- ☐ Work Assignment Amendment
- [X] Work Plan Approval
- ☐ Work Assignment Close-Out
- ☐ Incremental Funding

Period of Performance: From 06/29/2011 To 03/22/2012

Comments:
The work plan dated 08/19/2011 is approved. A cap of 5,000 hours and $800,000 is currently in place.

☐ Superfund — Accounting and Appropriations Data — [X] Non-Superfund

SFO (Max 2): ☐

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

	Cost/Fee	LOE
Contract Period 06/23/2009 To 06/22/2012	$0.00	
This Action:	$0.00	
Total:	$0.00	

Work Plan / Cost Estimate Approvals

	Cost/Fee	LOE
Contractor WP Dated: 08/19/2011	$1,360,229.00	6,498
Cumulative Approved:	$1,360,229.00	6,498

Work Assignment Manager Name: E-Marie Wines	Branch/Mail Code:
(Signature) (Date)	Phone Number: 312-886-6034
	FAX Number:
Project Officer Name: Cynthia Bowie	Branch/Mail Code:
(Signature) (Date)	Phone Number: 202-564-7726
	FAX Number:
Other Agency Official Name	Branch/Mail Code:
(Signature) (Date)	Phone Number:
	FAX Number:
Contracting Official Name: Christine Edwards	Branch/Mail Code:
(Signature) 10/6/11 (Date)	Phone Number: 202-564-2182
	FAX Number:

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-09

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-W-09-024	06/23/2009 To 06/22/2012 Base Option Period Number 2	Contaminated Sediment support

Contractor	Specify Section and paragraph of Contract SOW
BATTELLE MEMORIAL INSTITUTE	Tasks 1-7

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [ ] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 06/29/2011 To 06/22/2012

Comments:
Work Assignment Initiation for WA 2-09. A Technical and Financial Work Plan is required. Currently, there are 5,978 Professional Labor Hours allocated for this WA. All tasks of SOW should be completed.

☐ Superfund — **Accounting and Appropriations Data** — [X] Non-Superfund

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

SFO (Max 2):

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

Contract Period:	Cost/Fee:	LOE:
06/23/2009 To 06/22/2012		
This Action:		
Total:		

Work Plan / Cost Estimate Approvals

	Cost/Fee:	LOE:
Contractor WP Dated:		
Cumulative Approved:		

Work Assignment Manager Name: E-Marie Wines (Signature) (Date)		Branch/Mail Code: Phone Number: 312-886-6034 FAX Number:
Project Officer Name: Cynthia Bowie (Signature) (Date)		Branch/Mail Code: Phone Number: 202-564-7726 FAX Number:
Other Agency Official Name: (Signature) (Date)		Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: Christine Edwards K Barton for (Signature)	6/29/11 (Date)	Branch/Mail Code: Phone Number: 202-564-2182 FAX Number:

Contract #: EP-W-09-024
Work Assignment #: 2-09
6/18/2011

Purpose and Background

The Great Lakes are among the largest and most complex freshwater ecosystems in the world, providing a home, water and food to millions of aquatic plants, animals and people. The Great Lakes Legacy Act of 2002 is part of a larger strategy to provide a healthy, natural Great Lakes environment for swimming and fishing as well as a source of clean water for drinking and industrial uses.

Although discharges of toxic chemicals to the Great Lakes have been reduced in the last 30 years, high concentrations of contaminants persist in the sediment (mud) of some rivers, harbors and bays as a "legacy" of North America's industrialization.

Harmful pollutants to the Great Lakes include polychlorinated biphenyls (PCBs), heavy metals, oil and grease and polycyclic aromatic hydrocarbons (PAHs). Contaminants like PCBs settle into the sediment and can enter the food chain when they are ingested by fish where they can cause adverse effects to human health and the environment.

To help address the contaminated sediment problem, the Great Lakes Legacy Act of 2002 was signed into law on Nov. 27, 2002. The Act authorizes $270 million in funding over five years, beginning in 2004, to specifically assist with the cleanup of contaminated sediment in America's 31 Areas of Concern or AOCs. AOCs are designated by the United States and Canada as locations where beneficial consumption, dredging activities, or drinking water consumption have been impaired or restricted. For most of these AOCs, the driving factor causing the impairment is contaminated sediment. U.S. Environmental Protection Agency's Great Lakes National Program Office administers the Legacy Act.

As of June 2011, 10 remediation projects have been largely completed and several more are scheduled to get under way in 2012. Nearly 1, 300,000 cubic yards of sediment have been cleaned up.

As these GLLA projects are completed it is important to be able to measure the overall success of each individual project to be able to monitor overall Program effectiveness. This Statement of Work (SOW) provides the basis for monitoring support to allow for the conduct of pre-remedial baseline assessments as well as post-remedial assessments to allow GLNPO to better evaluate GLLA Program effectiveness. Additionally, this SOW provides the basis for support for site characterization at locations under the reauthorization of the GLLA and sediment remediation effectiveness research. The universe of sites that will be incorporated in this program include Great Lakes Areas of Concern. The approach outlined below to evaluate the effectiveness of the program will allow GLNPO to make rigorous, qualitative assessments based on quantitative data as to whether sediment chemistry, sediment toxicity, benthic community, and/or bioaccumulation potential after implementation of a sediment remediation project is better, worse, or unchanged when compared to pre-project conditions. The site characterization analysis will be more quantitative in nature and look at the nature and extent of sediment contamination in a phased approach. The ultimate goal of the site characterization under the reauthorization of the GLLA is a complete site characterization that can inform remedial actions. This approach will allow for a more efficient way to characterize a site by ensuring that only the most pertinent information is collected at each phase in the process, and improve the likelihood

that a proposed remedy is neither excessive in size nor inadequate. The sediment remediation effectiveness research support will assist the program in future remediation projects by building off the information collected as well as lessons learned from previous sediment remediation projects.

Quality System Documentation
The EPA quality policy requires every project involved in the collection of environmental data (measurements or information that describe environmental processes, location, or conditions; ecological or health effects and consequences; or the performance of environmental technology) must have written and approved quality system documentation that meets the American National Standard Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs, ANSI/ASQC E4-1994. "Quality System Documentation" includes a Quality Management Plan (QMP), a Quality Assurance Project Plan (QAPP), or such other documentation which demonstrates compliance with ANSI/ASQC E4-1994. The purpose of the documentation is to specify the policies, organization, objectives, and the quality assurance activities needed to achieve the project objectives of the environmental collection activity.

A contractor with current, approved Quality System Documentation will, by the earlier of (i) the 30th day prior to collection of environmental data and (ii) the 90th day after the project start date, notify GLNPO's Quality Assurance Manager of the way it is applying the above standard to this project. In all other cases, Quality System Documentation shall be submitted for approval to GLNPO by the earlier of (i) the 30th day prior to collection of environmental data and (ii) the 90th day after the project start date.

Contact GLNPO's Quality Manager, Louis Blume (312) 353-2317 with questions or to request sample documentation. Further guidance is available in EPA QA/R-5 "EPA Requirements for Quality Assurance Project Plans."

Data Management
Data management procedures shall begin during project planning activities. The contractor shall follow the "Great Lakes Legacy Act Data Reporting Standard" (including the stand-alone list of minimum field data requirements) in previously provided CD. The data standard (1) details requirements for collection and submittal of field and laboratory data, (2) provides guidance on complying with the requirements, and (3) includes as attachments current EPA guidance documents that define structures of the acceptable electronic data deliverables (EDD), as well as templates for each of the acceptable EDDs. Additional data collection or reporting requirements specific to the project may be required and will come from technical direction from the WAM.

The contractor shall ensure that field staff are properly trained in the collection of locational data per the U.S. EPA's "Interim Guidance for Developing Global Positioning System Data Collection Operating Procedures and Quality Assurance Project Plans," Revision 1.0, dated February 2008 (provided under previous WA). To document adherence to the locational data policy, the contractor shall complete the "U.S. EPA Great Lakes National Program Office Locational Data Checklist and Metadata Recording Form" (provided under previous WA) for each data collection event.

General Requirements
Tasks to be provided include, but are not limited to: statistical sampling design; sediment/porewater sampling support; sample analysis for chemical, physical and biological tests; QAPP development; Health & Safety Plan (HSP) development; data reporting; mapping of results; data management and final reporting.

The following tasks will involve analytical sampling and will therefore require the development of Quality Assurance Project Plans (as outlined above) for each task. The contractor shall comply with the outlined sampling and testing requirements outlined in Appendix A. These requirements should be considered as guidance but may be modified per task. Any modifications will come from technical direction from the WAM.

The total number of technical hours for this Work Assignment shall not exceed 5,978. The contractor shall notify the EPA WAM when 75% of the allotted hours have been reached either in any one subtask or in the overall work assignment.

Unless otherwise identified under a specific task, TSCA CBI requirements will not apply.

This Work Assignment will start with the date of the Contracting Officer's signature and extend through June 22, 2012.

Task 1: **Additional work necessary to complete projects began under Contract EP-W-04-021, work assignment 2-11.**

Work was conducted under the above contract and work assignment to provide assistance to GLNPO to monitor the effectiveness of the program at four (4) sites in the Great Lakes (Division Street outfall – Task 1; Ruddiman Pond and Main Branch – Task 2; Kinnickinnic River – Task 3, and; West Branch of the Grand Calumet River – Task 4). This task will allow the completion of final reports for the two remaining projects – Kinnickinnic River and Ruddiman Creek. There shall be no duplication of work completed under the previous WA and this work will be initiated from technical direction from the WAM.

I. Deliverables

The Contractor shall prepare and provide the following documents:

1. Final reports will be submitted in both paper and electronic copies following final comments provided by the EPA WAM. Electronic copies will be provided in both original (native) formats as well as in Adobe Acrobat format.

2. Final Electronic data deliverable in spreadsheet or database format containing all location, chemistry, toxicology, bioaccumulation and physical data collected as part of this sampling effort.

Deliverable	Due Date	2009 Target Date
Draft Technical and Financial Work Plan submitted by Battelle	Within 2 weeks of receipt of TO	July 6
Final Technical and Financial Work Plan submitted by Battelle	2 weeks after receipt of comments from GLNPO	July 14
Final GLNPO report and final data summary package submitted by Battelle	Within 30 days of receipt of GLNPO comments on draft final data summary	Per direction from WAM

II. Period of Performance

This task will start with the date of the Contracting Officer's signature and extend through June 22, 2012.

III. EPA Contacts

Work Assignment Manager:
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EPA Technical Project Manager
Brenda R. Jones
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77 W. Jackson Boulevard
Chicago, IL 60604
Phone: (312) 7188
Fax: (312) 697-2069
email: jones.brenda@epa.gov

Task 2: **Determination of the nature and extent of potential contaminant concentrations in sediments within the Cuyahoga River – Gorge Dam project area.**

The Cuyahoga River flows into the central basin of Lake Erie at Cleveland, Ohio. The lower 45 miles of the river, from the Ohio Edison Dam to the mouth, plus 10 miles of Lake Erie shoreline is an AOC that has long been considered the single most environmentally disturbed river system tributary to Lake Erie. It is on the Clean Water Act Section 303 list of impaired waters. However, water quality problems associated with point source discharges to the river have largely been resolved and aquatic life has responded well to these water quality improvements.

Contract #: EP-W-09-024
Work Assignment #: 2-09
6/18/2011

The Ohio Edison (gorge) dam was identified in the Ohio *2008 Integrated Water Quality Monitoring and Assessment Report* as a significant contributor to non attainment of the state's water quality standards due to habitat alteration and hydraulic modification (Ohio EPA, 2008). The U.S. EPA-approved total maximum daily loads (TMDLs) (Ohio EPA, 2003) recommend that dams be evaluated for removal/modification. Any efforts towards remediation through dam removal/modification must begin with the proper characterization of the sediments behind the dam. Specifically, this site of interest includes approximately 1.4 miles of the Cuyahoga River above the dam.

Under Task 6, work assignment 4-15, contract EP-W-09-024, the contractor developed field sampling plan (FSP) and a quality assurance project plan (QAPP). Under the base period the contractor completed the QAPP and completed phase 1 of the sampling. This task will allow for the completion of the FSP/QAPP for phase II, but no work completed under the previous work assignment shall be duplicated. Additionally, this task will allow for the sample collection, analytical analysis, and report writing for phase II.

I. Site Objectives

1. Complete FSP/QAPP for Phase II based on technical direction from the WAM.
2. Determine the nature and extent of sediment contamination in the Cuyahoga River assessment area. This will be done based on the results of Phase I and technical direction from the WAM.

II. Site Scope of Work

Subtask 2.1 Task Management

The Contractor shall prepare and submit a work plan in accordance with the requirements of this contract. The Contractor shall also participate in general planning conference calls and on-site meetings, prepare monthly progress reports, and conduct other task management activities.

The Contractor's monthly progress reports shall provide a breakdown of costs for each subtask. Costs shall be provided on a bimonthly basis.

The Contractor shall ensure that appropriate quality assurance measures are taken. Deliverables are expected to be of high quality and to contain a minimum of errors (unless the document requested is simply an interim draft).

The Contractor shall submit all final reports/documents as Microsoft Word, Excel and Adobe Acrobat Portable Document File, via email and/or disk.

Subtask 2.2 Sample Collection and Laboratory Analysis

In accordance with previous guidance, the Contractor shall support the U.S. EPA in the field during the Cuyahoga River sampling event. The field effort is tentatively scheduled for July of

2011. The Contractor shall also provide services to analyze samples, report field and laboratory results, and provide an interpretive report of field and laboratory results. Additionally, the contractor shall also provide a sampling vessel able to collect cores in locations identified from the phase I sampling effort where refusal was failed to be achieved. The parameters and number of samples will come from the final results of Phase 1 as well as technical direction from the WAM. For work plan and costing purposes the contractor should assume that 130 sediment samples and 13 field duplicates will be collected and analyzed for the following contaminants of concern (COCs):

- PCB Aroclors
- PAHs (N = 36)
- Eight trace metals (Total As, Cd, Cr, Cu, Pb, Hg, Ni, Zn)
- Pesticides
- Oil and grease
- Total organic carbon (TOC)
- Particle size distribution (PSD)
- Bulk density (wet and dry)
- Percent moisture

Subtask 2.3 Quality Assurance and Data Validation

Complete QAPP without duplicating efforts, and ensure to adequately document data verification, validation, and management procedures. Prior to initiation of this subtask, the WAM will initiate a conference call with the Contractor to define the appropriate project-specific quality system documentation.

Data verification is the process for evaluating the completeness, correctness, and conformance/compliance of a specific data set against the method, procedural, or contractual specifications. Data validation, however, is an analyte- and sample-specific process that extends the evaluation of data beyond method, procedure, or contractual compliance (i.e., data verification) to determine the quality of a specific data set relative to the end use. The potential effects of the deviation will be evaluated during the data quality assessment.

EPA will validate the data received from the CLP labs. The Contractor is expected to track the preliminary Electronic Data Deliverables (EDDs) from CLP, and will alert the project lead if the data is not being received as expected. Once the contractor receives the validated from EPA, the contractor is expected to verify the data based on EPA guidance documents, and prepare a data verification report based on the results of this validation. The Contractor should then compile the validated and verified results as described below, and submit the database to EPA in a timely manner. The contractor is expected to validate non-CLP data, and prepare a validation and verification report based on EPA guidance. The contractor is expected to upload the validated and verified data as described below, and submit the data to GLNPO in a timely manner. All electronic data deliverables will be submitted to GLNPO in a Microsoft Excel compatible spreadsheet or Microsoft Access database format containing all location, chemistry, and physical data collected as part of this sampling effort. The GLNPO specific EDD or SEDD/ADR format

needs to be used.

The contractor will assure that all data collected under this work assignment is of sufficient quality to determine the current conditions of sediments within the defined area of the Cuyahoga River – Gorge Dam. If there are issues with the data identified by the data verification and data validation process, the contractor will work with EPA to resolve the issues.

Subtask 2.4 Data Management

The Contractor shall submit all electronic data deliverables in spreadsheet or database format containing all location, chemistry and physical data collected as part of this sampling effort. All results files submitted must include results for all quality control (QC) samples and parameters required by the QAPP. The contractor shall ensure that the lab specifies which set of results should be considered reportable when multiple dilutions or reanalysis of samples occurs. The required formats for electronic data deliverables will be provided by the WAM.

Subtask 2.5 Support for Outreach, Public Communication, Public and Other Meetings

The Contractor shall prepare materials in support of and will attend site-related meetings. It is anticipated that there will be at least one meeting. The Contractor (as directed by the EPA WAM) shall prepare at least one site-related fact sheet and graphics of the sampling results for meetings and presentations.

III. Deliverables

The Contractor shall prepare and submit a revised work plan in accordance with contract requirements. EPA will approve the work plan in accordance with contract requirements.

The Contractor shall prepare and provide the following deliverables as part of the final GLNPO report for the GLNPO pre-characterization sampling and analysis project:

1. Copies of raw laboratory data reports containing the final data package submitted by the laboratories regarding analyses performed as part of this project. [The full data package shall include a narrative summary, chain-of-custody forms, results forms, raw data, electronic results, and non-project information.]

2. Electronic data deliverable in spreadsheet or database format containing locational, chemical, and physical data collected as part of this sampling effort.

Subtask	Deliverable	Due Date	2009 Target Date
1 - Work Plan	Draft Technical and Financial Work Plan submitted by Battelle	Within 2 weeks of receipt of TO	July 6

	Final Technical and Financial Work Plan submitted by Battelle	2 weeks after receipt of comments from GLNPO	August 14
2 – QAPP/FSP	Final GLNPO QAPP and FSP submitted by Battelle	Within 7 days of receiving GLNPO comments on Draft QAPP and FSP	Per direction from WAM
	Monthly Progress Reports submitted by Battelle	20th of each month	20th of each month
3 - Sampling & Analysis	Draft data summary of GLNPO characterization sediment chemistry analyses submitted by Battelle	Within 1 month of completing sampling	Per direction from WAM
4 – Reporting	Draft Final GLNPO report and draft data summary package with phase II sampling recommendation submitted by Battelle	Within 1 month of completing sampling	Per direction from WAM
	Final GLNPO report and final data summary package submitted by Battelle	Within 2 months of completing sampling	Per direction from WAM

IV. Period of Performance

This task will start with the date of the Contracting Officer's signature and extend through June 22, 2012.

V. EPA Contacts

Work Assignment Manager:
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email: wines.e-marie@epa.gov

Contract #: EP-W-09-024
Work Assignment #: 2-09
6/18/2011

EPA Technical Project Manager
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Task 3: **Baseline Assessment of Environmental Remediation of Contaminated Sediments of the Ottawa River in the Maumee River Area of Concern**

The Ottawa River in northwest Ohio is a constituent of the Maumee AOC. In 1987, the Maumee AOC was classified by the International Joint Commission (IJC) because it was found to have impairments for 10 of the 14 evaluated beneficial uses, primarily due to sediment contamination from heavy metals and organic chemicals. The project area is roughly an 8.8 mile stretch of the Ottawa River, from the mouth of the river at Lake Erie's Maumee Bay (River Mile [RM] 0.0) upstream to Auburn Road in Toledo, Ohio (RM 8.8). The final design for this project is underway, but the likely remediation scenario will include the removal of approximately 257,000 cubic yards (CY) of contaminated sediment from the lower portion of the Ottawa River (including roughly 14,000 CY from the Sibley Creek tributary).

This task will allow for the completion of the final report. There shall be no duplication of work completed under the previous WA and this work will be initiated from technical direction from the WAM.

I. Deliverables

The Contractor shall prepare and provide the following documents:

1. Final reports will be submitted in both paper and electronic copies following final comments provided by the EPA WAM. Electronic copies will be provided in both original (native) formats as well as in Adobe Acrobat format.

2. Final Electronic data deliverable in spreadsheet or database format containing all location, chemistry, toxicology, bioaccumulation and physical data collected as part of this sampling effort.

Deliverable	Due Date	2009 Target Date
Draft Technical and Financial Work Plan submitted by Battelle	Within 2 weeks of receipt of TO	July 6

Final Technical and Financial Work Plan submitted by Battelle	2 weeks after receipt of comments from GLNPO	July 14
Final GLNPO report and final data summary package submitted by Battelle	Within 30 days of receipt of GLNPO comments on draft final data summary	Per direction from WAM

II. Period of Performance

This task will start with the date of the Contracting Officer's signature and extend through June 22, 2012.

III. EPA Contacts

Work Assignment Manager:
E. Marie Wines
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Email: wines.e-marie@epa.gov

EPA Technical Project Manager
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email: jones.brenda@epa.gov

Task 4:**Baseline Assessment of Environmental Remediation of Contaminated Sediments of the East Branch of the Grand Calumet River (EBGCR) in the Grand Calumet River Area of Concern**
All tasks have been completed. No additional work is expected under this work assignment.

Task 5: **Site characterization at the Cuyahoga River – Old Channel (CROC) Project: sediment characterization and volume estimates, groundwater sampling, and preliminary habitat assessment.**

The Cuyahoga River flows into the central basin of Lake Erie at Cleveland, Ohio. Within the Lake Erie basin, the Cuyahoga River has long been considered the single most environmentally

disturbed system and is a Great Lakes area of concern. Considerable modification of the physical habitat of the lower river has occurred, particularly as a result of navigation needs. In 1827, a bypass channel was dredged allowing the river to enter the lake approximately one mile upstream of the natural mouth. This eased some navigation problems, but the bypass channel diverted river flow and the natural mouth was filled in, leaving the original course of the river a blind channel. Both the old channel and the lower main stem of the river are now heavily used navigation channels lined with factories, commercial docks and storage facilities, marinas and entertainment complexes. These segments of the river have been severely modified by deep dredging, bank-shaping and shoreline structures of steel sheet piling, cement seawall and limestone rip-rap.

In spite of the massive physical alterations and decades of pollutant discharge, the area at the upper end of the old channel has returned to some semblance of naturalness by regaining beds of submerged aquatic vegetation. Fish community surveys over the past several years indicate the potential for the old channel to support a diverse fish community. However, the fish that populate this area display high levels of DELT anomalies. Brown bullhead, observed in the old channel by both U. S. Geological Survey – Biological Resource Discipline (USGS-BRD) and Ohio EPA, have a high incidence of tumors. Much of the old channel is continually dredged to maintain a depth of 21 ft., and it is assumed that this would reduce the potential for contaminants to concentrate there. However, the upper blind end of the channel is much shallower, rarely dredged and has little circulation or flushing. Lake Erie seiches also contribute to backflow and the potential to direct polluted water from the main river channel into the old channel. There is also the potential that sediments along the stream banks adjacent to the dredged channel may harbor elevated levels of contaminants. Existing sediment data for the old channel is limited to several sites sampled by the Corps of Engineers in the dredged navigation channel.

The Cuyahoga River Old Channel Project site was approved for 100% site characterization under the Legacy Act on January 5, 2010. The GLLA project focuses on the upper end of the Old Channel, beginning at the marina until it terminates near highway 6 (see attached figures). The project is within the Cuyahoga River Area of Concern (AOC), in Cleveland, Ohio, adjacent to Lake Erie. The project lies in a well-defined and highly industrialized area with clear hot spots of sediment contamination accompanied by significant impacts on the fish population. These multiple impacts are likely stemming from contaminated sediments, and the ultimate goal of this effort is to remediate the area and delist the beneficial use impairments and eventually aid in delisting this Area of Concern.

An assessment of the data available for this site and entire Old Channel was performed by OEPA in 2003, and the most recent sediment sampling events were in 2003 (also OEPA, but some USACE data are also available). This assessment found that the sediments are contaminated with elevated levels of PAHs and PCBs as well as metals, including mercury and cadmium, though clear relationships with the ecological (fish) impacts were not apparent. There does not appear to be TSCA-level PCB contamination in the sediments. Overall, better estimates of the volumes of sediments are needed to define the project, which will be a key focus of the sediment sampling.

In addition, there are ongoing and planned upland remedial and development activities occurring directly adjacent to the Legacy project. Further site assessment is needed to better quantify the amount of contaminated sediment at the nearshore and whether there are ongoing sources of contamination, especially from the upland historically contaminated sites to the Old Channel.

At the terminal end of the project, near highway 6, is a fairly quiescent area that the project partners would like to be considered for habitat work. As part of the site characterization, limited habitat assessment data will also be collected.

The Cuyahoga River Old Channel (CROC) Project is being assessed under 100% site characterization of the Great Lakes Legacy Act (GLLA). The project boundaries are sediments and nearshore from the marina until the channel ends near highway 6. The included maps provide additional detail of location and previous sampling locations.

Prior sediment sampling efforts indicate that there are multiple sediment contaminants at moderate to high levels of PAHs and PCBs (non-TSCA), metals, including mercury and cadmium. The chief goal of the sediment sampling will be to estimate volumes of soft sediments within the project area, but also we to need additional samples within the marina and its slips to fill in some data gaps in chemistry.

Another focus of the site characterization is to assess if there are source control concerns at the site, largely stemming from the upland historically contaminated sites. Much of the upland area on the southern bank of the project is not active with industry (with the major exception of Great Lakes Towing near the eastern edge of the project) and are being considered in potential brownfields projects. Because of this historic contamination, we will be assessing groundwater contamination as a potential to the Channel sediments. And because there is current brownfields interest at the project there are some existing groundwater monitoring wells. It is anticipated that some of the existing wells will be sampled for this characterization effort, but that additional wells will need to be placed closer to the banks to better understand the relationship between groundwater contamination and the channel sediments.

The last component of the characterization will be to do preliminary habitat assessment work, focusing on the terminal end of the project, near highway 6. Based on previous evaluations, and demonstrated beneficial use impairments, during the 100% site characterization, the contractor will perform the following habitat evaluation measures:

- Light penetration analysis (for example secchi disks) at 5 locations within the Old Channel, including both sides of the channel.
- At the same 5 locations as the secchi depth reading, employ Ohio EPA's Qualitative Habitat Evaluation Index (QHEI).
- Conduct a submerged and nearshore vegetation survey identifying species per unit area (e.g., replicate plots between 1 and 5 square meters).
- Qualitative benthos analysis – when pulling sediment samples, visually identify presence and taxa of benthos to lowest possible field identification level.

File

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-10

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-W-09-024	06/23/2009 To 06/22/2012 Base Option Period Number 2	Ottawa River Dredging Eval.

Contractor: BATTELLE MEMORIAL INSTITUTE

Specify Section and paragraph of Contract SOW: Tasks 1 and 3

Purpose:
- ☐ Work Assignment
- ☐ Work Assignment Amendment
- ☒ Work Plan Approval
- ☐ Work Assignment Close-Out
- ☐ Incremental Funding

Period of Performance: From 06/23/2011 To 06/22/2012

Comments:

☐ Superfund — Accounting and Appropriations Data — ☒ Non-Superfund

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

SFO (Max 2): ☐

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

Contract Period: 06/23/2009 To 06/22/2012 — Cost/Fee: $0.00 — LOE:

This Action:

Total:

Work Plan / Cost Estimate Approvals

Contractor WP Dated: 08/01/2011 — Cost/Fee: $835,974.00 — LOE: 6,270

Cumulative Approved: — Cost/Fee: $835,974.00 — LOE: 6,270

Work Assignment Manager Name: Richard Brenner (Signature) (Date)	Branch/Mail Code: Phone Number: 513-569-7657 FAX Number:
Project Officer Name: Cynthia Bowie (Signature) (Date)	Branch/Mail Code: Phone Number: 202-564-7726 FAX Number:
Other Agency Official Name: (Signature) (Date)	Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: Christine Edwards Christine Edwards (Signature) 8/4/11 (Date)	Branch/Mail Code: Phone Number: 202-564-2182 FAX Number:

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-10

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-W-09-024	06/23/2009 To 06/22/2012 Base Option Period Number 2	Ottawa River Environmental

Contractor: BATTELLE MEMORIAL INSTITUTE

Specify Section and paragraph of Contract SOW: Tasks 1 and 3

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [ ] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 06/23/2011 To 06/22/2012

Comments:
Work Assignment Initiation - A Technical and Financial Work Plan are required. There are 5,951 PLHs allocated for this Work Assignment.

☐ Superfun — Accounting and Appropriations Data — [X] Non-Superfund

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

SFO (Max 2): ☐

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code (Max 7)
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

Contract Period	Cost/Fee	LOE
06/23/2009 To 06/22/2012		
This Action:		
Total:		

Work Plan / Cost Estimate Approvals

	Cost/Fee	LOE
Contractor WP Dated:		
Cumulative Approved:		

Work Assignment Manager Name: Richard Brenner	(Signature)	(Date)	Branch/Mail Code: Phone Number: 513-569-7657 FAX Number:
Project Officer Name: Cynthia Bowie	(Signature)	(Date)	Branch/Mail Code: Phone Number: 202-564-7726 FAX Number:
Other Agency Official Name:	(Signature)	(Date)	Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: Christine Edwards	Christine Edwards (Signature)	6/21/11 (Date)	Branch/Mail Code: Phone Number: 202-564-2182 FAX Number:

STATEMENT-OF-WORK

CONTRACT NUMBER: EP-W-09-024

WORK ASSIGNMENT: 2-10 (Performance Based)

TITLE: Joint U.S. EPA ORD/GLNPO Evaluation of Remedy Effectiveness and Tracking of Potential Additional Contamination Sources for the Ottawa River Environmental Dredging Project

PROJECT ADMINISTRATOR: U.S. Environmental Protection Agency
Office of Pollution Prevention and Toxic Substances
Washington, DC

PROJECT CONTRACTOR: Battelle Memorial Institute, Columbus, OH

INTRODUCTION AND BACKGROUND

An interdisciplinary and collaborative partnership was formed in March 2006 between the U.S. Environmental Protection Agency's (U.S. EPA's) National Risk Management Research Laboratory (NRMRL) and National Exposure Research Laboratory (NERL), both located in Cincinnati and hereafter referred to as ORD (U.S. EPA Office of Research and Development), and U.S. EPA's Chicago-based Great Lakes National Program Office (GLNPO). The original purpose of this partnership was to undertake a comprehensive joint research evaluation of the Ashtabula River (Ashtabula, OH) Environmental Dredging Project in northeast Ohio. This project was initiated in the summer of 2006 on Work Assignment (WA) 2-11 administered by U.S. EPA's Office of Pollution Prevention and Toxics Substances (OPPTS) under Contract No. EP-W-04-021 and has continued to this date under a subsequent Agency task order (TO) contract (Contract EP-C-05-057, TO 50) administered by NRMRL/ORD. Additional follow-up testing is planned for the Ashtabula River Project beginning in June 2011 under another OPPTS WA contract (Contract No. EP-W-09-024, the same contract under which this project will be conducted).

Due primarily to the successful implementation of the ORD/GLNPO collaboration on the Ashtabula River Project, a second joint collaborative study was undertaken in 2009 on the Ottawa River in northwest Ohio (Toledo, OH). Under its mandate through the Great Lakes Legacy Act (GLLA) 0f 2002 and as implemented on the Ashtabula River, environmental dredging was again selected by GLNPO as the remedy-of-choice to remove sediment contaminated with polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), and lead from selected areas of the Ottawa River. ORD and GLNPO are conducting an ongoing comprehensive evaluation of remedy effectiveness of environmental dredging as applied to the Ottawa River. This evaluation involves the conduct of a multitude of environmental measurements before (Phase 1), during (Phase 2), and after (Phase 3) dredging to characterize the effectiveness of the selected remedy in removing contaminated sediments from the river and in restoring the river's ecosystem.

The collaborative ORD/GLNPO Ottawa River Project was initiated in 2009 under WA 0-11 on this contract (Contract EP-W-09-024). Phase 1 activities consisting primarily of pre-dredging sediment profile and biological indicator characterization studies were conducted under WA 0-11 in the fall of 2009 and early spring of 2010. Dredging then began on May 3, 2010 under GLNPO's authorization from the GLLA to oversee the cleanup of contaminated sediments in the Great Lakes area. Evaluations of the performance and effectiveness of this contaminated sediment remedial process have continued during dredging (Phase 2 studies) and immediately after dredging was completed in the fall of 2010 (Phase 3 studies) under WA 1-11 of this contract. WA 1-11 work will end on June 22, 2011 during the performance of Phase 3 studies. The completion of Phase 3 studies will be carried out on this work assignment (WA 2-10) of Contract EP-W-09-024 commencing on June 23, 2011.

Based on stipulations in the GLLA, GLNPO is carrying out its own independent characterization and remedial effectiveness studies both before and following dredging under a separate work assignment of this contract. To maximize data utility and comparative analysis, efforts have been and continue to be made to conduct the ORD and GLNPO characterization and evaluation sampling programs during the same approximate time periods as much as possible.

In summary, the GLNPO/ORD partnership has developed an approach to evaluate remedial efficacy of environmental dredging that includes extensive sampling and analysis before (Phase 1), during (Phase 2), and after (Phase 3) dredging operations to: 1) determine sediment and contaminant removal efficiencies, and 2) monitor and measure the impact of remedial operations and sediment removal on the river ecosystem. Phase 1 studies were completed under WA 0-11, and Phase 2 and a portion of Phase 3 studies have been completed under WA 1-11. The remaining Phase 3 studies will be performed under this new work assignment (WA 2-10)

SITE DESCRIPTION

The Ottawa River lies in extreme northwest Ohio, flowing into Lake Erie's western basin at the City of Toledo. The Ottawa River is a component of the Maumee River Area of Concern as defined by the International Commission. The Ottawa River is approximately 45 miles long; however, the current Ottawa River Cleanup addresses only the portions of the lower 8.8 miles of the river (defined as the Lower Ottawa River) where urban and industrial activities have had a detrimental impact on the river as a beneficial resource. Widespread influx of contaminants has resulted in significant degradation of water, sediment, and ecological habitat quality in this lower river. The primary contaminants-of-concern (COCs) at the site are PCBs, PAHs, inorganics (principally lead), and oil and grease, although PCBs in the surface sediment are the COC on which remedial compliance is being evaluated. Contaminant removal was accomplished via environmental dredging in targeted areas in the river to pre-determined cut lines. These cut lines were established to reach the following specific post-cleanup and final goals for the remedial project area:

Post-cleanup surface-weighted average concentrations of:

- Total PCB Aroclors < 1.5 mg/kg
- Total PAHs (sum of 16 compounds)< 30 mg/kg
- Lead < 180 mg/kg

Final surface-weighted average concentrations of:

- Total PCB Aroclors < 1.0 mg/kg total
- Total PAHs (sum of 16 compounds) < 22.8 mg/kg
- Lead < 128 mg/kg.

The targeted remedial site in the Ottawa River was divided into four reaches (Figure A-1). Reach 1 starts at River Mile (RM) 0.0 and proceeds southerly to RM 3.2, Reach 2 from RM 3.2 to RM 4.9, Reach 3 from RM 4.9 to RM 6.5, and Reach 4 from RM 6.5 to RM 8.8. The lower 6 miles of the Lower Ottawa River is considered a lacustuarine system and is subject to flow reversals due to seiche events on Lake Erie. From Reach 4, the river generally widens as it moves downstream to RM 0.0. The steepest and most channelized sections exist in Reach 4 (average 75 ft width) that tends to exhibit the greatest flow velocities and erosive conditions. Multiple storm sewers and combined sewer overflows (CSOs) discharge to the river along Reach 4. Reach 3 is a transitional reach (average width 130 ft) that is highly impacted by three major landfills along the lower two-thirds of this section. Reaches 1 and 2 are very broad, flat, and slow moving (Reach 2 averages 600 ft in width, and Reach 1 widens to over 1,000 ft). These lower two Reaches are most subject to seiche effects; however, flow reversals have been observed southward through Reach 3.

PREVIOUS STUDIES AND ACTIVITIES

Approximately 260,000 yd^3 of contaminated sediments were initially targeted for removal between RM 8.8 and RM 3.2 (proceeding north in order, Reaches 4, 3, and 2). No dredging was conducted in Reach 1 (R.M. 3.2 - R.M 0.0). Neither were all of Reaches 4, 3, and 2 dredged. Rather, selected zones or Dredge Management Units (DMUs) of differing lengths and depths were targeted for dredging by GLNPO where prior sampling had revealed sediment PCB concentrations in excess of 1 mg/kg sediment (see Figure A-2 for maps of Reaches 2, 3, and 4 showing the DMUs). In each reach, the DMUs are labeled beginning with A for the most southerly zone that was dredging and proceeding through the alphabet to the end of that reach.

During Phase 1, ORD collected 30 deep cores in Reach 3 only, four each in DMUs D, E, M, and N; two in DMU F: and six each in DMUs O and P to determine undisturbed sediment contamination profiles prior to dredging. Fish, macroinvertebrate, and food web (spiders) tissue sampling, organic matter sampling, and deployment of passive surrogate samplers were also carried out in Phase 1 to complete pre-dredge characterization work..

Real-time monitoring of river conditions was performed during dredging in Phase 2 when the dredge boat was moving through one of the river stretches or zones from which pre-dredging characterization sediment and water samples were collected during Phase 1. Biological indicator